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POLYCHAETOUS ANNELIDS

Part I. Aphroditidae to Pisionidae

(PLATES 1-28)

BY OLGA HARTMAN

The polychaetous annelids included in this report were collected largely by the Allan Hancock Pacific Expeditions to Lower California, western Mexico, western Central America, the Pacific side of Panama, Colombia, Ecuador, Peru, Cocos and Galapagos islands, and southern California north to San Francisco. A few specimens, indicated with accession numbers, enumerated at the end of the station list, are in the collections of The University of Southern California, and were collected from southern California.

A station list follows, including only those stations of the Allan Hancock Pacific Expeditions which were represented in the families investigated in this report. Under each are listed the species collected, for the families herein considered. New species or new names are preceded by an asterisk.

- St. 20-33. Jan. 1, 1933. La Libertad, Ecuador. With electric light.
Arctonoë vittata (Grube)
- St. 22-33. Jan. 22, 1933. La Plata Island, Ecuador.
Halosydna parva Kinberg
- St. 28-33. Jan. 25, 1933. Gardner Bay, Hood Island, Galapagos.
Diving in 2 fms.
Sthenelais fusca Johnson
- St. 66-33. Feb. 9, 1933. Albemarle Island, Tagus Cove, Galapagos.
In 10-20 fms., dredged.
**Eusigalion hancocki*, new species
- St. 74-33. Feb. 14, 1933. Albemarle Island, Cartago Bay, Galapagos.
In 3-6 fms., dredged.
**Eusigalion hancocki*, new species
- St. 76-33. Feb. 14, 1933. Same locality. North sandy shore, off dead tree.
Thormora johnstoni (Kinberg)
- St. 114-33. Mar. 10, 1933. Bahia Honda, Panama. In coral, from 2 fms., near East Point.
Iphione ovata Kinberg

- St. 116-33. Mar. 13, 1933. Puerto Culebra, Costa Rica. In 2 fms., dredged in Cocos Bay.
Sthenelais variabilis Potts *colorata* Monro
- St. 125-33. Mar. 19, 1933. Isabel Island, Sinaloa, Mexico. In coral, from 2 fms.
Lepidonotus hupferi Augener
- St. 126-33. Mar. 21, 1933. Santa Maria Bay, Lower California. In 0-25 fms., dredged.
**Eusigalion hancocki*, new species
- St. 132-34. Jan. 4, 1934. Braithwaite Bay, Socorro Island, Mexico. In 40 fms., dredged; rock and nullipore fragments.
Chaetacanthus magnificus (Grube)
- St. 140-34. Jan. 5, 1934. Sulphur Bay, Clarion Island, Mexico. Coral clump.
**Psammolyce spinosa*, new species
- St. 148-34. Jan. 13, 1934. Albemarle Island, Tagus Cove, Galapagos. In 12-15 fms., dredged. Corals, nullipores, rock.
Lepidonotus nesophilus Chamberlin
Lepidametria gigas (Johnson)
Hololepida, sp.
- St. 152-34. Jan. 14, 1934. Same locality, north shore. In coral.
Halosydna parva Kinberg
- St. 167-34. Jan. 19, 1934. Charles Island, Galapagos. In 15 fms., dredged. Rock.
Lepidametria virens (Blanchard)
- St. 169-34. Jan. 20, 1934. Academy Bay, Indefatigable Island. Dredged. Rock and algae.
Lepidametria virens (Blanchard)
- St. 171-34. Jan. 21, 1934. East of Wreck Bay, Chatham Island. In 35-40 fms., dredged. Coarse sand and corallines.
Lepidonotus furcillatus Ehlers
- St. 182-34. Jan. 24, 1934. James Bay, James Island. In 30 fms., dredged. Coarse sand.
Lepidametria virens (Blanchard)
- St. 194-34. Jan. 27, 1934. Post Office Bay, Charles Island, Galapagos. In coral.
Thormora johnstoni (Kinberg)

- St. 198-34. Jan. 29, 1934. Charles Island, Galapagos. In 55-65 fms., dredged. Sand.
Polyodontes panamensis (Chamberlin)
**Eusigalion spinosum*, new species
- St. 208-34. Feb. 9, 1934. Between La Libertad and Salinas, Ecuador. In 7-8 fms., dredged. Sand and small shells.
**Eusigalion hancocki*, new species
- St. 209-34. Feb. 9, 1934. La Libertad, Ecuador. In 8-10 fms., dredged. North of St. Elena. Rock with large shells and gorgonids.
Aphrodita japonica Marenzeller
- St. 210-34. Feb. 9, 1934. Between La Libertad and Salinas, Ecuador. In 7-10 fms., dredged. Rock, large shells and gorgonids.
Lepidonotus hupferi Augener
- St. 211-34. Feb. 10, 1934. La Plata Island, Ecuador. Shore. Rocky reefs.
Chaetacanthus magnificus (Grube)
- St. 212-34. Feb. 10, 1934. Same. In 45-55 fms., dredged. Sand, shale, rock, and mud.
Aphrodita japonica Marenzeller
Lepidonotus furcillatus Ehlers
- St. 213-34. Feb. 10, 1934. Same. In 7-10 fms., dredged. Rocks with nullipores.
Aphrodita japonica Marenzeller
Iphione ovata Kinberg
?*Lepidametria virens* (Blanchard)
Sthenelanelia uniformis Moore
- St. 216-34. Feb. 11, 1934. Cape San Francisco, Ecuador. In 20 fms., dredged. Muck.
Polyodontes oculca (Treadwell)
Pareulepis fimbriata (Treadwell)
**Leanira fimbriarum*, new species
- St. 217-34. Feb. 11, 1934. Same. In 2 fms. Rocky.
Thormora johnstoni (Kinberg)
- St. 232-34. Feb. 14, 1934. Port Utria, Colombia. Shore, isthmus between two islands.
Iphione ovata Kinberg

- St. 239-34. Feb. 15, 1934. Port Utria, Colombia. Shore. Reef inner side, outer isle.
Iphione ovata Kinberg
- St. 244-34. Feb. 21, 1934. Bahia Honda, Panama. In 30-35 fms., dredged, between Medidor and Pacora Island. Fine shell, mud, coarse sand.
**Pontogenia laeviseta*, new species
Panthalis pacifica Treadwell
- St. 245-34. Feb. 21, 1934. Same. In 15-25 fms., dredged off Northwest Point, Pacora Island. Rock, large shells, and nullipores.
Chaetacanthus magnificus (Grube)
**Lepidonotus pomareae* Kinberg *panamensis*, new subspecies
- St. 249-34. Feb. 22, 1934. Same. In 15-20 fms., dredged, outside of island south of bay. Rock.
**Pontogenia laeviseta*, new species
- St. 250-34. Feb. 22, 1934. Secas Islands, Panama. In 25 fms., dredged. Mud and dead shells.
**Psammostyche fimbriata*, new species
Sthenelais variabilis Potts *colorata* Monro
- St. 251-34. Feb. 22, 1934. Same. In 15 fms., dredged, south and west of islands. Rock and nullipores.
Chaetacanthus magnificus (Grube)
- St. 264-34. Mar. 2, 1934. Petatlan Bay, Mexico. In 25 fms., dredged south and west of White Friars Island. Rock with gorgonids.
Chaetacanthus magnificus (Grube)
- St. 273-34. Mar. 4, 1934. Tenacatita Bay, Mexico. In 75 fms., dredged between white rocks and bay. Shells and worm tubes in sand and mud.
Harmothoe exanthema (Grube)
Lepidonotus nesophilus Chamberlin
**Sthenelais maculata*, new species
- St. 277-34. Mar. 5, 1934. Isabel Island, Mexico. In 10-25 fms., dredged around island. Sand, nullipores.
**Pontogenia laeviseta*, new species
- St. 283-34. Mar. 9, 1934. Thurloe Bay, Lower California. In 8-10 fms., dredged off Thurloe Pt. Rock with gorgonids.
**Psammostyche fimbriata*, new species

- St. 287-34. Mar. 10, 1934. South Bay, Carras Island, Mexico. In 10-15 fms., dredged. Rock close to kelp beds.
Aphrodita falcifera, new species
Sthenelais verruculosa Johnson
- St. 315-34. Dec. 8, 1934. Indefatigable Island, Galapagos. Opposite Gordon Rocks. In coral.
Lepidametria virens (Blanchard)
- St. 343-34. Dec. 12, 1934. James Island, Galapagos. Shore, Sullivan Bay.
Iphione ovata Kinberg
Sthenelais fusca Johnson
- St. 364-35. Jan. 10, 1935. Callao, Peru. In 3 fms. In line with Lorenzo Island.
Sthenelais maculata, new species
- St. 366-35. Jan. 10, 1935. Same. In 8 fms. Between rocks south of Lorenzo Island.
Pisionella hancocki, new genus and species
- St. 372-35. Jan. 12, 1935. Independencia Bay, Peru. In 5 fms. East of Vieja Island.
Harmothoë exanthema (Grube)
- St. 373-35. Jan. 12, 1935. Same. In 12 fms.
Sthenelais maculata, new species
- St. 374-35. Jan. 12, 1935. Same.
Halosydna parva Kinberg
- St. 375-35. Jan. 13, 1935. Same. Shore, lee side of Vieja Island.
Lepidonotus crosslandi Monro
Pisione oerstedii Grube
Pisionella hancocki, new genus and species
- St. 376-35. Jan. 13, 1935. Same. In 7 fms.
Lepidonotus crosslandi Monro
Harmothoë exanthema (Grube)
- St. 379-35. Jan. 13, 1935. Independencia Bay, Peru. In 20 fms.
Sthenelais maculata, new species
- St. 380-35. Jan. 14, 1935. Same. Shore. Station on east side of bay.
Halosydna fuscomarmorata (Grube)
Halosydna parva Kinberg
- St. 384-35. Same. In 5 fms., three-fourths mile off shore.
Harmothoë exanthema (Grube)

- St. 385-35. Jan. 14, 1935. Same. In 9-10 fms., one and one-fourth miles off shore. Red algae and gastropods.
Harmothoë exanthema (Grube)
- St. 391-35. Jan. 17, 1935. Lobos de Afuera, Peru. Shore. Main isle, with electric light. Rocks.
Halosydna fuscomarmorata (Grube)
- St. 396-35. Jan. 18, 1935. Salango Island, Ecuador. In 12 fms., Salango Bay.
Lepidametria virens (Blanchard)
- St. 400-35. Jan. 19, 1935. Manta, Ecuador. Shore.
**Sthenelais maculata*, new species
- St. 405-35. Jan. 22, 1935. Gorgona Island, Colombia. Shore, below sandy beach.
**Polynoë veleronis*, new species
- St. 414-35. Jan. 23, 1935. Port Utria, Colombia. In 3 fms., lee beach of isle. Pocillopora coral.
Halosydna fuscomarmorata (Grube)
?*Thormora johnstoni* (Kinberg)
- St. 429-35. Jan. 27, 1935. Octavia Bay, Colombia. In 30-35 fms., north end of channel. Coarse sand and gravel.
Lepidonotus furcillatus Ehlers
- St. 430-35. Jan. 27, 1935. Same. In 75 fms., outside middle of channel. Soft mud.
Aphrodita japonica Marenzeller
- St. 432-35. Jan. 27, 1935. Same. In 50 fms. Soft mud and fine gravel.
Aphrodita japonica Marenzeller
- St. 436-35. Jan. 28, 1935. Piñas Bay, Panama. Shore.
Iphione ovata Kinberg
**Eulagisca panamensis*, new species
**Leanira fimbriarum*, new species
- St. 437-35. Jan. 28, 1935. Piñas Bay, Panama. In coral.
Halosydna fuscomarmorata (Grube)
- St. 443-35. Jan. 29, 1935. Same. In 20 fms., N.N.E. of Pt. Isle. Mud.
**Polyodontes frons*, new species

- St. 444-35. Jan. 29, 1935. Same. In 2-4 fms. Coral from south bay, mainland side.
**Halosydna glabra*, new species
Iphione ovata Kinberg
- St. 446-35. Feb. 4, 1935. Secas Islands, Panama. Shore. Small grass-covered island with reef.
Iphione ovata Kinberg
- St. 448-35. Feb. 5, 1935. Same. In 12 fms. Anchorage from first small sand beach.
Lepidonotus hufferi Augener
- St. 450-35. Feb. 5, 1935. Same. In 14 fms. Shells, nullipores.
Thormora johnstoni (Kinberg)
Sthenelais variabilis Potts *colorata* Monro
- St. 451-35. Feb. 5, 1935. Same. In 12 fms., toward anchorage from small island.
**Pontogenia laeviseta*, new species
Sthenelais variabilis Potts *colorata* Monro
- St. 465-35. Feb. 8, 1935. Playa Blanca, Costa Rica. Shore. Shale beach between beach and rocky reef.
**Psammolyce antipoda* (Schmarda) *anoculata*, new subspecies
- St. 466-35. Feb. 9, 1935. Parker Bay, Costa Rica. Shore. Small isle at north shore.
Iphione ovata Kinberg
- St. 470-35. Feb. 9, 1935. Same. In 5 fms. Sand and mud.
Sthenelais variabilis Potts *colorata* Monro
- St. 492-36. Feb. 16, 1936. Pt. Tosco, Lower California, Mexico. In 45 fms. Green mud.
Panthalis pacifica Treadwell
- St. 498-36. Feb. 19, 1936. San Lorenzo Channel, south of Espiritu Santo Island, Lower California. In 5-15 fms. Coralline algae.
Iphione ovata Kinberg
- St. 502-36. Feb. 21, 1936. La Paz Bay, Lower California. In 7 fms., out from anchorage. Sandy mud.
Polyodontes ocula (Treadwell)
- St. 510-36. Feb. 22, 1936. Cove south of Ballena Bay, Espiritu Santo Island, Lower California. Shore.
Iphione ovata Kinberg

- St. 518-36. Feb. 25, 1936. North Bay of San Francisco Island, Lower California. Shore.
Iphione ovata Kinberg
- St. 525-36. Feb. 28, 1936. Channel west of Coronados Island, Lower California. In 3-10 fms. Corallines.
Thormora johnstoni (Kinberg)
- St. 529-36. Mar. 1, 1936. Off San Francisquito Bay, Lower California. In 165 fms. Shale and gray mud.
Lepidonotus versicolor Ehlers
- St. 530-36. Mar. 1, 1936. Same. In 10-20 fms. Coral, kelp, nullipores.
Thormora johnstoni (Kinberg)
- St. 532-36. Mar. 2, 1936. In San Francisquito Bay, Lower California. In 20 fms. Sand and kelp.
**Hololepida veleronis*, new species
- St. 542-36. Mar. 4, 1936. In Puerto Refugio, Angel de la Guardia Island, Lower California. In 15-30 fms. Broken shale.
**Pontogenia laeviseta*, new species
- St. 546-36. Mar. 5, 1936. North of Angel de la Guardia Island, Lower California. In 40-70 fms.
**Hololepida veleronis*, new species
- St. 548-36. Mar. 5, 1936. Same. In 80 fms.
**Pontogenia laeviseta*, new species
- St. 549-36. Mar. 6, 1936. East of Angel de la Guardia Island, Lower California. In 40 fms.
Lepidonotus hedleyi Benham
- St. 558-36. Mar. 9, 1936. Off Isla Partida to the south, Lower California. In 20 fms. Gravel and shell.
Aphrodita japonica Marenzeller
Thormora johnstoni (Kinberg)
- St. 610-37. Feb. 28, 1937. Santa Rosalia Bay, Lower California. In 15 fms. Sand and kelp.
Halosydna parva Kinberg
- St. 612-37. Mar. 1, 1937. Lagoon Head Anchorage, Lower California. In 7 fms. Sand.
Harmothoë hirsuta Johnson
- St. 617-37. Mar. 2, 1937. San Juanico Bay, Lower California. In 24 fms. Sand and kelp.
**Halosydna*, species B

- St. 632-37. Mar. 6, 1937. San Gabriel Bay, Espiritu Santo Island, Lower California. In 24 fms. Sandy mud.
Aphrodita japonica Marenzeller
- St. 634-37. Mar. 6, 1937. Same. Shore. In coral.
Thormora johnstoni (Kinberg)
**Sthenelais maculata*, new species
- St. 638-37. Mar. 7, 1937. Same. Shore. In coral.
Iphione ovata Kinberg
- St. 639-37. Mar. 7, 1937. San Lorenzo Channel, Espiritu Santo Island, Lower California. In 3-5 fms. Sand, algae, corallines.
**Psammolyce myops*, new species
**Sthenelais maculata*, new species
- St. 640-37. Mar. 7, 1937. West of San Lorenzo Channel, Espiritu Santo Island, Lower California. In 30 fms. Sandy mud.
**Leanira fimbriarum*, new species
- St. 662-37. Mar. 11, 1937. Agua Verde Bay, Lower California. In 8 fms. Off San Marcial reef.
Iphione ovata Kinberg
- St. 667-37. Mar. 12, 1937. Escondido Bay, Lower California. In 60 fms. Off Carmen Island.
**Leanira fimbriarum*, new species
**Sthenelais neoleanirac*, new species
- St. 683-37. Mar. 15, 1937. Outside Concepcion Bay, Lower California. In 12 fms. Corallines.
**Halosydna glabra*, new species
Lepidonotus hupferi Augener
Thormora johnstoni (Kinberg)
- St. 688-37. Mar. 16, 1937. Concepcion Bay, Lower California. In 12 fms. Sand and mud.
**Halosydna glabra*, new species
- St. 701-37. Mar. 20, 1937. Angeles Bay, Lower California, Mexico. In 32 fms. Sand and shell.
**Eusigalion hancocki*, new species
- St. 719-37. Mar. 24, 1937. Consag Rock, Lower California. In 20-25 fms.
**Halosydna*, species A
- St. 728-37. Mar. 27, 1937. San Esteban Island, Lower California. Shore. Rocky.
Lepidonotus versicolor Ehlers

- St. 740-37. Mar. 31, 1937. San Ignacio Bay, Sinaloa, Mexico. In 3-5 fms. Sand.
Aphrodita parva Moore
- St. 745-37. Apr. 2, 1937. Isabel Island, Sinaloa, Mexico. In 10-18 fms. Corallines.
**Eusigalion hancocki*, new species
**Psammolyce fimbriata*, new species
Sthenelais fusca Johnson
- St. 747-37. Apr. 2, 1937. Same. In 10-18 fms. Corallines.
**Eusigalion hancocki*, new species
- St. 769-38. Jan. 11, 1938. Off San Jose Light, Guatemala. In 20 fms. Mud.
Lepidametria virens (Blanchard)
**Eusigalion hancocki*, new species
- St. 770-38. Jan. 11, 1938. Same. In 7-11 fms. Sand, shell, mud.
**Panthalis marginata*, new species
Pareulepis fimbriata (Treadwell)
? *Sthenelais fusca* Johnson
- St. 780-38. Jan. 14, 1938. Chatham Bay, Cocos Island. In 40-46 fms. Coarse white sand.
**Eusigalion spinosum*, new species
**Psammolyce spinosa*, new species
Sthenelais fusca Johnson
- St. 789-38. Jan. 19, 1938. South Seymour Island, Galapagos. Shore. Rocky.
Iphione ovata Kinberg
Thormora johnstoni (Kinberg)
- St. 796-38. Jan. 21, 1938. Sullivan Bay, James Island, Galapagos. Shore. Rocky.
Iphione ovata Kinberg
- St. 814-38. Jan. 28, 1938. North of Hood Island, Galapagos. In 20-40 fms. Sand, shell.
Lepidonotus nesophilus Chamberlin
**Eusigalion spinosum*, new species
- St. 833-38. Feb. 10, 1938. Independencia Bay, Peru, off north entrance. In 8 fms. Sand, shell.
**Sthenelais maculata*, new species

- St. 834-38. Feb. 10, 1938. Same. Off east rocky point. In 21 fms.
Mud.
**Polynoë veleronis*, new species
- St. 835-38. Feb. 10, 1938. South end of Independencia Bay, Peru. In
18 fms. Sand, shell, rock.
**Polynoë veleronis*, new species
- St. 863-38. Mar. 1, 1938. Bahia Honda, Panama, off North Island.
In 30-50 fms. Rock, sand, mud.
Aphrodita japonica Marenzeller
**Pontogenia laeviseta*, new species
Lepidonotus furcillatus (Ehlers)
**Lepidonotus pomereae* Kinberg *panamensis*, new subspecies
- St. 867-38. Mar. 2, 1938. Secas Islands, Panama. Shore. Coral.
Iphione ovata Kinberg
Lagisca multisetosa Moore
- St. 874-38. Aug. 1, 1938. Northeast of Anacapa Island, California.
In 45 fms. Dead shell.
Lepidonotus caelorus Moore
Eunoë senta (Moore)
? *Lagisca multisetosa* Moore
- St. 876-38. Aug. 1, 1938. Same. In 45 fms. With sea urchins.
**Eusigalion spinosum*, new species
Sthenelanella uniformis Moore
- St. 878-38. Aug. 1, 1938. North of Anacapa Island, California.
Halosydna brevisetosa Kinberg
Thormora johnstoni (Kinberg)
Sthenelanella uniformis Moore
- St. 880-38. Aug. 2, 1938. East of Santa Rosa Island, California. In
16 fms. Sand and shell.
**Leanira fimbriarum*, new species
- St. 882-38. Aug. 3, 1938. South of San Miguel Island, California.
In 15 fms. Sand and shell.
Halosydna brevisetosa Kinberg
- St. 885-38. Aug. 4, 1938. San Luis Obispo Bay, California. In 8-14
fms.
Halosydna brevisetosa Kinberg
? *Eunoë barbata* Moore

- St. 886-38. Aug. 5, 1938. Off Half Moon Bay, California. In 16 fms. Coarse gravel.
Aphrodita refulgida Moore
Halosydna brevisetosa Kinberg
- St. 887-38. Aug. 7, 1938. East of Middle Farallon Islands, California. In 37 fms.
Aphrodita refulgida Moore
**Eusigalion spinosum*, new species
- St. 888-38. Aug. 8, 1938. Monterey Bay, California. In 10-13 fms. Fine sand.
Harmothoë hirsuta Johnson
**Eusigalion spinosum*, new species
Sthenelais verruculosa Johnson
- St. 889-38. Aug. 8, 1938. Monterey Bay, off Point Piños, California. In 36 fms. Broken shell.
**Eusigalion spinosum*, new species
- St. 890-38. Aug. 8, 1938. Monterey Bay, off Point Piños, California. In 10-13 fms., dredged in fine sand.
**Sthenelais hancocki*, new species
**Eusigalion spinosum*, new species
- St. 891-38. Aug. 8, 1938. Outside of Monterey Bay, California. In 26 fms. Sponges.
Lepidonotus caelorus Moore
**Eusigalion spinosum*, new species
- St. 893-38. Aug. 10, 1938. Off Point Arguello, California. In 15-30 fms. Sand and algae.
**Eusigalion spinosum*, new species
Sthenelais verruculosa Johnson
- St. 894-38. Aug. 10, 1938. South of San Miguel Island, California. In 5-10 fms. Kelp.
Lepidonotus caelorus Moore
Sthenelais verruculosa Johnson
- St. 896-38. Sept. 12-14, 1938. San Miguel Island, California. Dredged.
**Eusigalion spinosum*, new species
- St. 897-38. Same.
**Eusigalion spinosum*, new species
Sthenelais verruculosa Johnson

- St. 899-38. Nov. 17, 1938. Off Long Point, Catalina Island, California. In 90-110 fms., dredged in sandy gravel.
Aphrodita parva Moore
?Sthenelais fusca Johnson
- St. 900-38. Nov. 18, 1938. Off Long Point, Catalina Island, California. In 40 fms. Brachiopod and sponge clusters.
Lepidonotus caelorus Moore
- St. 901-38. Nov. 20, 1938. Point Fermin, California. Shore. Rocky beach.
Halosydna brevisetosa Kinberg
- St. 902-38. Nov. 21, 1938. Portuguese Bend, California. Shore. Rocky beach.
Halosydna brevisetosa Kinberg
Halosydna johnsoni (Darboux)
- St. 903-38. Dec. 5, 1938. Anaheim Slough, near Anaheim Landing, California. Shore. Muddy sand.
Halosydna johnsoni (Darboux)
- St. 904-38. Dec. 6, 1938. Laguna Beach, California. Shore. Reefs.
Halosydna brevisetosa Kinberg
Thormora johnstoni (Kinberg)
Harmothoë hirsuta Johnson
- St. 905-38. Dec. 7, 1938. Same as for St. 903-38.
Halosydna johnsoni (Darboux)
- St. 906-38. Dec. 8, 1938. Portuguese Bend, California. Shore. Reefs.
Halosydna brevisetosa Kinberg
Halosydna johnsoni (Darboux)
Harmothoë hirsuta Johnson
- Acc. R 1. Dredged off southern California.
Aphrodita refulgida Moore
- Acc. 525. El Segundo, near Los Angeles, California. Dredged.
Halosydna latior Chamberlin
- Acc. 542. Five miles east of Lighthouse, near Los Angeles, California. Dredged.
Halosydna latior Chamberlin
- Acc. 585. D 88. East from breakwater, near San Pedro, California. In 8 fms.
Halosydna latior Chamberlin
Sthenelais fusca Johnson

Acc. 587. D 90. Dredged off southern California.

**Eusigalion spinosum*, new species

Acc. 590. D 93. Near Rocky Point, vicinity of Los Angeles, California. Dredged.

Aphrodita armifera Moore

**Eusigalion spinosum*, new species

D 104. Santa Catalina Island, California. Dredged.

Aphrodita armifera Moore

Acc. 622. D 133. White's Point, southern California. Dredged.

Halosydna latior Chamberlin

Table I below indicates the main geographical areas investigated by the Allan Hancock Pacific Expeditions and gives the species, grouped by families, taken from these areas. The numbers in the columns refer to the stations investigated, without the year number. Complete station numbers may be consulted in the list above. Areas indicated by *x* refer to stations for which there are collections made other than by the Hancock Expeditions, or for previous records from the literature.

It is to be observed that, of a total of 59 species, few are common to the northern and southern eastern Pacific. Thus, for example, only 5 species (*Aphrodita japonica*, *Arctonoë vittata*, *Thormora johnstoni*, *Sthenelais fusca*, and *Sthenelais verruculosa*) have been taken over this range. In addition, there are only 6 species (*Aphrodita refulgida*, *Halosydna latior*, *Pareulepis fimbriata*, *Eusigalion spinosum*, *Leanira fimbriarum*, and *Sthenelanella uniformis*) common to southern California and the equatorial or subequatorial Pacific. Also, the affinities of the fauna of the Gulf of California are seemingly with that of western Mexico, on the one hand, and the Galapagos, on the other.

TABLE I LOCALITIES

Name of Species	LOCALITIES						
	Calif. California	Gulf of Mexico	Costa Rica	Panama	Colombia Ecuador	Peru	Galapagos
Aphroditidae							
<i>Aphrodita armifera</i>	895, 897						
<i>A. falcifera</i>		287					
<i>A. japonica</i>	881	558, 632		863	430, 432	209, 212	213
<i>A. parva</i>	899	740					
<i>A. refulgida</i>	886, 887						
<i>Pontogenia laeviseta</i>		542, 548	277	244, 249 451, 863			
Polynoidae							
<i>Arctonoe vittata</i>	x					20	
<i>Chaetacanthus magnificus</i>		132, 264		245, 251		211	
<i>Eulagisca panamensis</i>				436			
? <i>Eunoë barbata</i>	885						
<i>Eunoë senta</i>	874						
	878, 882, 885, 886, 901, 902, 904, 906						
Halosydna brevisetosa							
<i>H. fuscomarmorata</i>				437	414	380, 391	
<i>H. glabra</i>		683, 688		444			
<i>H. johnsoni</i>	902, 903, 905, 906						
<i>H. latior</i>	x						
<i>H. parva</i>		610			22	374, 380	152
<i>H. sp. A</i>		719					
<i>H. sp. B</i>		617					

The families considered in this report include the scale-bearing chaetopods and the Pisionidae. The latter family is included because its affinities are with this group, with respect to its proboscoidal and prostomial structures. A key to these families follows.

1. Dorsum provided with elytra which may or may not be concealed by a felty covering 2
1. Dorsum without elytra or felt PISIONIDAE
2. Some segments with dorsal cirri, others with elytra 3
2. All segments with elytra; body long, vermiform (not represented in the collections) . . . POLYLEPIDIDAE
3. Body long, slender, all posterior segments bearing elytra SIGALIONIDAE
3. Body long, slender, to short, plump; posterior segments have elytra alternating with dorsal cirri or have no elytra 4
4. Elytra and dorsal cirri alternate more or less regularly throughout; prostomium with sessile eyes and with or without pedunculate eyes; without facial tubercle . . . POLYODONTIDAE
4. Elytra and dorsal cirri alternate regularly on anterior segments, but irregularly present on posterior segments or entirely absent 5
5. Ventral acicula stout, with an expansive chitinous, embedded plate (pl. 23, fig. 280) at its distal end; body short, subrectangular; posterior segments without true elytra PAREULEPIDIDAE
5. Ventral acicula without distal expansion; body long or short; posterior segments with or without elytra 6
6. Proboscis without horny jaw pieces; prostomium with a median antenna; eyes usually stalked (rarely sessile); facial tubercle well developed; dorsum with or without felt APHRODITIDAE
6. Proboscis with 4 horny jaw pieces at its distal end; prostomium with 3 or 2 antennae; eyes sessile; facial tubercle absent or not conspicuous; dorsum without felt covering POLYNOIDAE

Family **Aphroditidae**

The Aphroditidae are almost entirely restricted to subintertidal habitats. Thus they are usually not encountered in shore collecting. Two genera, *Aphrodita* Linnaeus and *Pontogenia* Claparède, are represented in the collections.

Sixteen species of the genus *Aphrodita* have been reported from the eastern Pacific, the majority of them as original descriptions, and only one species of *Pontogenia* (*P. curva* Chamberlin). Many of these are too little known to permit certain identity. Eleven species of *Aphrodita* were originally described from California, nine of which originated in southern California. A revision of the entire group from the eastern Pacific is necessary before any extensive conclusions may be drawn as to the distribution of these species. A revision and study of the type specimens would be of the greatest value. However, at least some of them have not been found where they were said to have been deposited.

Numerous specimens available for study in the collections of The University of Southern California, collected from California south to Peru, have permitted the identification of some of the species which had been in doubt. *A. raripillata* Essenberg (1917, p. 413) agrees well with *A. armifera* Moore (1910, p. 371). Both types originated in southern California. *A. armifera* Fauvel (1925, p. 144) from Australia is another species (see page 23). *A. cryptommata* Essenberg (1917, p. 409) must be referred to *A. japonica* Marenzeller (1879, p. 111), one of the commonest species of *Aphrodita* dredged in fairly shallow waters from southern California southward. *A. leioseta* Chamberlin (1919, p. 254) from Mendocino, California, is perhaps the same. *A. echidna* Treadwell (1906, p. 1157) (not Quatrefages, 1865, p. 197) was referred to *A. japonica* by Moore (1910, p. 375). This seems unlikely, however, because some of the neuropodial setae were said to be bifurcated, with a denticulate tip (Treadwell, 1906, fig. 24). This condition is not usually characteristic of the genus *Aphrodita*.

Aphrodita solitaria Essenberg (1917, p. 408) may be the same as *A. refulgida* Moore (1910, p. 376). Both have pointed neuropodial setae (pl. 1, figs. 7, 8) in addition to other identical characters, and both probably originate from southern California. *A. castanea* Moore (1910, p. 380) was compared with *A. negligens* Moore (1905, p. 525; 1910, p. 385) but their identity was not definitely established. These two, as also *A. californica* Essenberg (1917, p. 406), have many simi-

larities. In *A. californica* the stout notopodial setae were said to be almost completely concealed in the felt. This character, in itself, is not significant for it is sometimes dependent on the amount of accumulated debris or attached organisms rather than on an actual difference in the lengths of these setae. Fauvel (1925, p. 140) questionably referred *A. castanea* Moore and *A. longipalpa* Essenberg (1917, p. 403) to *A. talpa* Quatrefages (1865, p. 196) from Australia. This identity seems extremely unlikely, especially because of the differences in the setae of both notopodia and neuropodia. Unless a restudy of the type of *A. longipalpa* is possible, this name is perhaps to be considered a doubtful one. There is no convincing record that *A. talpa* Quatrefages occurs in the eastern Pacific. Also, none of the specimens here available from the eastern Pacific have neuropodial setae as shown by Fauvel (1925, fig. 4) who re-examined the type specimen of *A. talpa* and made a careful study of the setae.

A. defendens Chamberlin (1919a, p. 80) was described from Peru, in 1,036 fms. The great depth from which it was taken does not favor its comparison with species from shallower waters without additional collections from similar depths.

The following species of APHRODITIDAE are taken up in this report.

Aphrodita armifera Moore (includes *A. raripillata* Essenberg)

Aphrodita japonica Marenzeller (includes *A. cryptommata* Essenberg and perhaps *A. leioseta* Chamberlin)

Aphrodita parva Moore

Aphrodita refulgida Moore (includes *A. solitaria* Essenberg)

Aphrodita falcifera, new species

Pontogenia laeviseta, new species

Genus APHRODITA Linnaeus

Aphrodita armifera Moore

Plate 1, Fig. 6

Aphrodita armifera Moore, 1910, pp. 371-375, pl. 31, figs. 65-66, pl. 32, figs. 67-75; Chamberlin, 1919c, p. 254 (not Fauvel, 1925; see *A. falcifera*, p. 23).

Aphrodita raripillata Essenberg, 1917, pp. 413-416, pl. 36, figs. 64-67, pl. 37, figs. 85-86 (not Fauvel, 1925, p. 144).

Collections.—Acc. 590, D-104, 895-38, 897-38, San Pedro, California. 5 specimens.

Aphrodita armifera is characterized by its heavy, smooth, dorsal notopodial spines which are deep copper colored. These are conspicuously heavier than the neuropodial spines and appear darker because of their thicker stems. They are stoutest at the base and taper rapidly to a blunt point. The longest are dorsalmost. They form 5 or 6 irregular transverse rows on a parapodium. They project out from the body so as to form a formidable series.

The ventralmost neuropodial setae have a pair of spurs differing from those in *A. falcifera* (cf. pl. 1, figs. 6 and 14). Median and superior neuropodial setae do not have lateral processes. The presence or absence of pilosity is variable. The ventral setae are ranked about as follows: 2 superior, 3 median, 4 to 6 inferior.

A. armifera differs from *A. falcifera* (see p. 23) most notably in having copper-colored, nearly straight, stout dorsal spines instead of yellow, slenderer, dorsal spines, and in having only the ventralmost neuropodial setae spurred instead of all or most of them.

A. armifera Fauvel (1925, pp. 144-147) from Australia is not the same as *A. armifera* Moore. In the former, the notopodial setae are rough, and the neuropodial setae have a lateral spur as described for *A. falcifera* (p. 23). Fauvel designated the notopodial setae as "bronzées ou dorées." In *A. armifera* Moore they are coppery.

A. raripillata Essenberg (1917, p. 413) from southern California may be referable to *A. armifera* Moore, although it is not certain that the inferior neuropodial setae have the paired spurs characteristic of the latter. In other respects the descriptions are similar.

Distribution.—Southern California. Subintertidal to 55 fms.

Aphrodita japonica Marenzeller

Plate 1, Figs. 1-5

Aphrodita japonica Marenzeller, 1879, pp. 111-112, pl. 1, fig. 2.

Aphrodita japonica Moore, 1903, p. 423; 1908, pp. 338-339; 1910, pp. 375-376; Berkeley, 1923, p. 211.

Aphrodita cryptommata Essenberg, 1917, pp. 409-411, pl. 34, figs. 39-50, pl. 37, fig. 83.

Collections.—209-34, 212-34, 213-34, 430-35, 432-35, 558-36, 632-37, 863-38, 881-38, Redondo Beach, California. 10 specimens.

Length to 48 mm, width to 25 mm without lateral fibers. The neuropodial setae are arranged in three tiers, arranged about as follows: 2 stout superior (pl. 1, fig. 1), 5 median slenderer than those in the superior rank (pl. 1, fig. 2), 7-20 inferior much paler and slenderer setae. Those in the superior and median tiers are falcate, copper colored, those in the inferior tier are as shown in figure 4, and are pale yellow. In some specimens the pilosity is very extensive (pl. 1, fig. 5), in others almost absent, because of the sloughing off of the pilose hood. The longer dorsal setae have a hooked tip (pl. 1, fig. 3).

Dorsal cirri are long, slender; ventral cirri are pale, tapering, extending distally about as far as the middle of the ventralmost setae or somewhat beyond.

The description of *A. cryptommata* Essenberg agrees well with that of *A. japonica* save for the statement that in the former the elytra are squarish along their medial margins. The shape of the elytra is similar, however, if the inner edge be slightly cut away, as sometimes happens when the dorsal felt is cut apart.

Distribution.—Northeast and northwest Pacific; California south to Ecuador. In depths to 75 fms.

Aphrodita parva Moore

Plate 1, Figs. 9, 10

Aphrodita parva Moore, 1905, pp. 529-532, pl. 34, figs. 3-7; 1908, p. 339; 1910, pp. 385-386; Treadwell, 1914, p. 178; Berkeley, 1923, p. 211.

Collections.—740-37, 899-38. About 25 specimens.

Length 8 to 24 mm; width to 15 mm without lateral fibers. The dorsum is dark drab, completely covered with fibers and debris, neither notopodial nor neuropodial setae projecting. Lateral fibers inconspicuous. The superior neuropodial setae are pilose distally (pl. 1, fig. 10). The inferior neuropodial setae have a minute spur at their widest part (pl. 1, fig. 9). Some of them have a delicate dehiscent hood.

Distribution.—Northeast Pacific, Gulf of Georgia to western Mexico. In depths from 3 to 667 fms.

***Aphrodita refulgida* Moore**

Plate 1, Figs. 7, 8

Aphrodita refulgida Moore, 1910, pp. 376-380, pl. 32, figs. 76-84;
Treadwell, 1914, p. 177.

Aphrodita solitaria Essenberg, 1917, pp. 408-409, pl. 37, figs. 81, 82;
pl. 33, figs. 27-38.

Collections.—886-38, 887-38, Acc. R 1. 3 specimens.

All of the neuropodial setae taper distally and terminate in an attenuated point (pl. 1, figs. 7, 8). The description of *A. solitaria* Essenberg agrees reasonably well with Moore's description of *A. refulgida*.

Monro (1933, p. 12) doubtfully referred some specimens from Perlas Islands in the Panama region to *A. solitaria* Essenberg. I believe these to be what has herein been designated *A. japonica* (see above).

Distribution.—Central and southern California. Subintertidal to 51 fms.

***Aphrodita falcifera*, new species**

Plate 1, Figs. 11-15; Plate 26, Figs. 319, 320

Collection.—287-34 (Holotype). 1 specimen.

Length 22 mm, width 16 mm; number of setigerous segments 34. Anterior and posterior ends similar in outline, the posterior end not greatly attenuated to form a tube.

Prostomium approximately triangular, the anterior end broadest; provided with 4 subequal black eye spots, the two of a side near together. A small median antenna is inserted between the eyes, and a smaller, papillar antenna is on each side between anterior and posterior eyes (pl. 1, fig. 15). The facial tubercle is large, conspicuous, as typical of the genus.

General appearance rough, spiny, because of the numerous, long, dorsal spines which project laterally, obliquely upward and dorsally across the body. The notopodial setae (pl. 26, fig. 319) are yellowish to gold, the neuropodial setae bronze colored. The former greatly exceed the ventral setae in number and length. The dorsal setae form ten or more irregular transverse series in each parapodium; they are slenderer than the superior neuropodial setae, and the ventralmost are about as thick as the dorsalmost, but the uppermost exceed the lower in length. In the inferior part of the fascicle there are a few finer, shorter setae which are obscurely pilose. The others appear rough due to the presence

of numerous pustules over the surface, but the tips are smooth (pl. 26, fig. 320).

The neuropodial setae project from the neuropodium in three series (pl. 1, fig. 11). There are 2 heavier, longer superior setae, 2 or 3 slenderer median setae of about the same color, and 3 or 2 still finer, somewhat paler inferior setae. All are falcate distally, with a minute spur near the point where the seta curves (pl. 1, figs. 12 to 14). This condition contrasts with that in *A. armifera* where only the inferior-most setae have a lateral projection, also in the latter the spur is paired (pl. 1, fig. 6). The elytra are pale or white, smooth save for a few scattered prickles.

Fauvel (1917, p. 167) reported and described a single specimen from southern Australia, which he referred to *A. talpa* Quatrefages. The same specimen he later (1925, p. 144) referred to *A. armifera* Moore. The dorsal setae were described as follows: "Bronzées ou dorées, plutôt courtes, droites ou légèrement incurvées et dépassent peu l'épais et grossier feutrage dorsal." In the specimen at hand, these setae are yellow, only the neuropodial setae are bronze. In other respects the specimen from Carros Island agrees with the description given for the individual from southern Australia. In my opinion this is different from *A. armifera* Moore.

Holotype.—AHF no. 1.

Distribution.—South Bay, Carros Island, Mexico, in 10-15 fms. ?Southern Australia.

Genus PONTOGENIA Claparède

Pontogenia laeviseta, new species

Plate 2, Figs. 16-30

Collections.—244-34, 249-34, 277-34, 451-35, 542-36, 548-36, 863-38 (Holotype). 10 specimens.

Length to 20 mm, width to 7 mm. Number of setigerous segments 32. Dorsum pale, the elytra imbricated and not concealed by felt, but laterally somewhat covered by foreign matter that is enmeshed in the strong dorsal spines. Notopodial setae pale amber, neuropodial setae somewhat darker. Ventrums pale save for dark spots that form a pattern, consisting of a pair along the mid-ventral line, and one or two irregular pairs along the sides, median to the parapodia. The dark spots

represent some of the ventral papillae which more or less closely cover the ventral surface. These papillae are continued on the neuropodia, thickest on the anterior sides.

The prostomium is white, globular, with a stout anterior prolongation forming the base of the median ceratophore (pl. 2, fig. 16). At the anteroventral margin is a pair of oval stalks bearing a pair of eyes at the terminal ends. The dorsal eye is small, rounded, the ventral much larger and more prominent. The median antenna is long, slender, greatly exceeding the cirrus of the first segment but surpassed by the palpi. The latter are smooth, white, tapering, inserted on the ventral side of the first foot, and extend distally beyond the prostomial antenna.

Parapodia are prominent in ventral view. The neuropodial lobe is elongate, triangular. The first parapodium is weak, largely concealed by the heavy bases of the palpi. Its setae are few, small. From the second segment the notopodia and neuropodia are much stronger. The notopodial setae include a dorsal fascicle of stouter, slightly curved setae faintly toothed on one side (pl. 2, fig. 29), and an inferior fascicle of much smaller, hair-like setae. The neuropodial setae include 2 stouter, falcate setae with several subterminal teeth (pl. 2, fig. 19), and an inferior fascicle of finer, smaller, more numerous setae with a falcate tooth and 2 rows of many teeth on the cutting edge (pl. 2, fig. 28).

The third segment (cirriferous) contains a superior fascicle of about 7 heavy, acicular notopodial setae, faintly denticulated on one side (pl. 2, fig. 26). The setae in other fascicles resemble those in the second segment. The dorsal cirrus is very long, slender, with a tip similar to that of the prostomial antenna, extending distally about as far as the palpi. The ventral cirrus extends distally about as far as the neuropodium, and has a slight terminal thickening.

Median parapodia have thick, blunt notopodia with numerous heavy setae, and triangular neuropodia with a few (about 3) long, falcate setae (pl. 2, figs. 17, 18). Some of the superiormost notopodial setae pierce the lateral margin of the elytrum, where the latter is attached to the elytraphore. They are directed dorsally so as to lie on the dorsal side of the elytrum. In addition, there are heavy notopodial setae directed laterally and ventrally. The neuropodia project laterally beyond the notopodia and have few (about 3) long, falcate setae. All are similar and have a subterminal spur some distance below the terminal fang (pl. 2, figs. 20, 21). The notopodial setae (pl. 2, fig. 22, 27) have asperities over most of their surface save at the tip and near its

insertion in the notopodium, but there are no lateral teeth or spinelets. The inferiormost notopodial setae are nearly smooth (pl. 2, fig. 30).

Posterior parapodia are essentially like those in the median region of the body, except that they are smaller, and the neuropodial setae have as many as 2 or 3 lateral spurs (pl. 2, figs. 23, 24).

Elytra 15 pairs, white, translucent, their point of attachment at the external margin (pl. 2, fig. 17), their surface covered over with many globular to elongate papillae, most crowded near the elyrophore (pl. 2, fig. 25) and somewhat dispersed near the distal margin. The papillae resemble those on the notopodium but are more flattened, merging into the surface of the elytrum.

The character of the prostomium with its ocular prominences, the kind of neuropodial setae and the elytra identify this species with the genus *Pontogenia*. It lacks, however, the harpoon-like and scimitar-like setae characteristic of most of the species of this genus. They are replaced by notopodial setae that are almost smooth except for minute asperities.

This is the first record, to my knowledge, of this genus from the eastern Pacific. Several species (*P. curva* Chamberlin, *P. maggiae* Augener, and *P. sericoma* Ehlers) have been described from the Gulf of Mexico and the West Indian region, but from each of these *P. laeviseta* differs most notably in its setigerous structures.

Holotype.—AHF no. 2.

Distribution.—Bahia Honda, Panama (type); Secas Islands, Panama; Isabel Island, Mexico; Angel de la Guardia Island, Lower California, Mexico. Shore to 80 fms.

Family **Polynoidae**

Key to Subfamilies of *POLYNOIDAE* herein considered

- 1. Prostomium with only two antennae; body short, depressed, completely covered by elytra **IPHIONINAE**
- 1. Prostomium with a median antenna in addition to the paired ones; body short, depressed to elongate slender; completely covered by elytra or more or less exposed **2**
- 2. Paired prostomial antennae inserted terminally, continuous with the prostomial peaks **LEPIDONOTINAE**
- 2. Paired prostomial antennae inserted ventrally, the prostomium terminating anteriorly in a pair of tapering peaks
 **HARMOTHOINAE**

Subfamily **Iphioninae** Seidler

Genus **IPHIONE** Kinberg

Iphione ovata Kinberg

Plate 3, Figs. 31, 32

Iphione ovata Kinberg, 1855, p. 383; 1910, p. 8, pl. 3, figs. 8-8H, pl. 10, fig. 43; Chamberlin, 1919a, p. 64; Monro, 1928a, pp. 557-558; 1928b, pp. 471-472.

Collections.—114-33, 232-34, 239-34, 343-35, 436-35, 446-35, 466-35, 498-36, 510-36, 518-36, 638-37, 662-37, 789-38, 796-38, 867-38. 28 specimens.

Elytral margin entire, without lateral fringe, but with conspicuous spines on the lateral and postlateral portions of the elytra. The prostomium has 2 pairs of black eyes on its posterior half, and a tiny median papilla midway between the eyes. The anterior paired antennae are inserted terminally, but the inflated appearance of the prostomial lobe obscures the bases of the antennae from dorsal view.

Parapodia are robust, the neuropodial lobes sharply truncate, the neuroacicular lobe projects from the dorsal ectal margin (pl. 3, fig. 32). Notopodial setae are numerous, slender, hair-like, closely serrated. Neuropodial setae are much coarser, the tip entire, with 15-20 transverse rows of serrations (pl. 3, fig. 31).

Distribution.—*Iphione ovata* Kinberg is widely distributed in tropical waters of the eastern Pacific, from Ecuador north to Agua Verde Bay, Gulf of California, and westward to the Galapagos Islands and the Hawaiian Islands. It is replaced by *I. muricata* Savigny in the Indo-Pacific region.

Subfamily **Lepidonotinae** SeidlerKey to Genera of *LEPIDONOTINAE* herein considered

1. With 12 pairs of elytra 2
1. With 15 pairs of elytra EULAGISCA
1. With 18 pairs of elytra HALOSYDNA
1. With more than 18 pairs of elytra 4
2. Elytrophores with branchiae CHAETACANTHUS
2. Elytrophores without branchiae 3
3. Notopodia with two kinds of setae, including some which are smooth, lancet shaped THORMORA
3. Notopodial setae of one kind, ornamented with transverse rows of serrations LEPIDONOTUS
4. Prostomial antennae inserted subterminally; neuropodial setae few, stout, falcate, the serrations obscure or absent ARCTONOË
4. Prostomial antennae inserted distinctly terminally; neuropodial setae numerous, not unusually stout, transverse serrations usually distinct LEPIDAMETRIA

Genus **CHAETACANTHUS** Seidler

Resembles *Lepidonotus* Leach in segmental and elytral counts; elytrophores with branchial appendages. Dorsal setae fine, hair-like, numerous, much as in *Iphione* Kinberg. Several species have been described in this genus, but all are thought to be identical with *C. magnificus* (Grube) (Seidler, 1924, p. 97).

Chaetacanthus magnificus (Grube)

Iphione magnifica Grube, 1875, p. 51.

Polynoë branchiata Treadwell, 1902, p. 186, figs. 5-7.

Lepidonotus (Physalidonotus) barbatus Augener, 1910, pp. 244-246, figs. 4-6.

Chaetacanthus magnificus Seidler, 1924, pp. 97-98; Monro, 1928a, p. 558.

Lepidonotus pilosus Treadwell, 1937, pp. 141-143, pl. 1, figs. 1-7.

Collections.—132-34, 211-34, 245-34, 251-34, 264-34. 7 specimens.

Lepidonotus (Physalidonotus) barbatus Augener was described from a single specimen questionably attributed to the north Pacific. The same author considered the specimen close to *Lepidonotus chitoniformis* Moore. The latter is, however, a *Euphione* (Seidler, 1924) and indigenous to the northwest Pacific.

Lepidonotus pilosus Treadwell was described from the southern end of the Gulf of California, Mexico. It has branchiae on the elytophores, hence a *Chaetacanthus*; the elytra are heavily fringed and the notopodial and neuropodial setae agree with those in *C. magnificus* (Grube).

Distribution.—West Indian region; Panama; eastern Pacific from Ecuador north to the Gulf of California. Widely distributed in warm and tropical seas. Intertidal to 40 fms. In coral and rock crevices.

Genus ARCTONOË Chamberlin

Consists of a varying number of segments, to 60 or more. Elytra continued to end of body but often leaving a broad dorsal area exposed. Inserted as in *Halosydna* Kinberg on the first 26 segments, insertion more or less irregular on more posterior segments. Last few pairs of elytra sometimes so small as to be made out with difficulty. Prostomium lepidonotoid, but lateral antennae inserted subterminally, and eyes much reduced in size. Parapodia subbiramous, the notopodium reduced, with an aciculum and a few serrated setae; neuropodium robust, its setae stout, falcate, often few in number, with serrations obscure or absent.

Arctonoë vittata (Grube)

Plate 3, Figs. 33-37

Polynoë vittata Grube, 1855, p. 82-83.

Lepidonotus lordi Baird, 1863, p. 107.

Halosydna lordi Baird, 1865, p. 190-191; Moore, 1908, p. 330.

Polynoë lordi Johnson, 1897, pp. 175-177, pl. 7, figs. 35, 44; pl. 8, figs. 51-51b; 1901, pp. 388-390.

Halosydna vittata Baird, 1865, p. 188.

Acholoë vittata Marenzeller, 1902, pp. 576-577, pl. 3, fig. 13.

Arctonoë lia Chamberlin, 1920, pp. 6B-7B, pl. 1, figs. 1-4, pl. 2, figs. 1-3.

Halosydnoïdes vittata Seidler, 1924, pp. 134-135; Monro, 1928c, p. 312.

Halosydna succinisetæ Hamilton, 1915, pp. 234-235, figs. 1-4.

Collection.—20-33, at night, with electric light. 2 specimens.

Pale or white; length to 25 mm, number of setigerous segments to 56. The prostomium is broader than long and has clavate appendages (pl. 3, fig. 33). Elytra present on some segments throughout length; they are smooth, pale, the edges entire or the outer edge slightly frilled. The first parapodium (segment 2) has bifid notopodial (pl. 3, fig. 36) and neuropodial setae (pl. 3, figs. 35, 37). The neuropodial setae in more posterior segments are stout, few, to 5 or 6 in a fascicle, with obscure rows of pectinae at the widest region (pl. 3, fig. 34).

No fine swimming setae or other specialized natatory organs could be detected that might explain the presence of these two individuals in the surface tow at night. Also, they are not sexually mature. The length of the specimens (25 mm) indicates that they were well past the pelagic larval stage, known to exist in some polynoids.

This is the first record of this species south of southern California.

Distribution.—Japan; Alaska; western North America to San Diego; Ecuador. Intertidal to 12 fms. Often found associated with *Fissurella* or other gastropods.

Genus EULAGISCA McIntosh

Body short, depressed; lateral antennae inserted subterminally, the median antenna dorsal to the paired ones. Elytra 15 pairs, inserted as in *Harmothoë* Kinberg. Notopodial and neuropodial lobes developed, attenuated distally to a slender tip. Notopodial setae numerous, some as stout as, or stouter than, the neuropodial setae; distally entire, and with transverse rows of pectinae more or less obscured. Neuropodial setae numerous, their tips entire or with a minute subterminal tooth (pl. 3, fig. 38), with transverse rows of pectinae more obvious than in the notopodial setae.

***Eulagisca panamensis*, new species**

Plate 3, Figs. 38-42

Collection.—436-35 (Holotype). One specimen.

Length 40 mm; width 6 mm without, 11 mm with parapodia, 17 mm with setae. Form broad, depressed, harmothoid. Prostomium without prostomial peaks, the paired antennae inserted subterminally, the median antenna inserted at the anterior margin of the prostomium, dorsal to the paired antennae. Facial tubercle present but not conspicuous. A triangular flap (=nuchal hood) extends toward the posterior margin of the prostomium but does not cover it.

Elytra 15 pairs, completely covering dorsum; their surface smooth, margin entire; the outer edge turned up by the dorsally directed notopodial fascicles. Anterior margin concave slightly (pl. 3, fig. 42). They are pale save for a semilunar, rust-colored area over the posterior half, around the elytral scar, but leaving a pale posterior margin. Styles of dorsal cirri, peristomial cirri, and prostomial antennae dark brown with pale terminal tips. Ventral cirri pale.

Parapodia well developed, the acicular lobes taper and terminate in points (pl. 3, fig. 39). Notopodial setae numerous, some finer, others about as heavy as the neuropodial setae; all are nearly smooth, with faint indications of teeth along the cutting edge (pl. 3, fig. 40). Neuro-podial fascicle stout, the dorsalmost setae similar to the ventralmost except that the latter are somewhat smaller; tip entire (pl. 3, fig. 41) or with a minute subterminal tooth (pl. 3, fig. 38); with transverse rows of pectinae.

The presence of some bifid neuropodial setae in this specimen minimizes the importance of this character in separating *Eulagisca* McIntosh from *Allmanniella* McIntosh. Monro (1936, p. 91) has already indicated the affinities of these 2 genera.

Eulagisca panamensis differs from *E. corrientis* McIntosh, the only other species in this genus, in that the notopodial setae are not notably stouter than the neuropodial setae; also, a few of the latter have a minute subterminal tooth. The elytra in *E. panamensis* are rather firmly attached, in *E. corrientis* they are readily detached. *E. corrientis* is known from the southwest Atlantic, in depths of 150-600 fms.; *E. panamensis* was taken from the intertidal zone on the Pacific side of Panama.

Holotype.—AHF no. 3.

Distribution.—Piñas Bay, Panama. Shore.

Genus **HALOSYDNA** Kinberg, emend., Hartman

Body moderately short, depressed; number of setigerous segments about 36; number of elytra 18 pairs (or rarely 19), distributed on segments 2, 4, 5, 7, 9, . . . 27, 28, 30, 31, 33 (or rarely also on 34). Notopodial setae shorter and slenderer than neuropodial setae, serrulated. Neuropodial setae with a distal enlargement, the tip entire or bifid, the expanded portion with transverse rows of serrations. (See Hartman, 1938, p. 109, for synonymy.)

Halosydna fuscomarmorata (Grube)

Plate 9, Figs. 119, 120

Polynoë fuscomarmorata Grube, 1875, p. 62.*Halosydna fuscomarmorata* Augener, 1906, pp. 117-119, pl. 3, figs. 41-44; Monro, 1928a, pp. 566-567.*Collections*.—391-35, 380-35, 414-35, 437-35. 5 specimens.

Length to 25 mm (egg-laden individual). The dorsum, including the elytra, is dark bluish gray, the ventrum paler; setae are amber colored. The prostomium has four small eyes so placed as to be almost visible in dorsal view. Elytra are smooth, with a characteristic dark, marmorated pattern, deepest in the area over the hilum, but leaving a pale or white spot over the area of attachment (pl. 9, fig. 119). Microtubercles are distributed chiefly along the anterior margin but a few are scattered over the entire surface (see also Monro, 1928a, p. 567). Neuropodial setae are distinctly bifid at their distal end, and the serrations increase in size distally (pl. 9, fig. 120).

Distribution.—Peru, Colombia, Panama. Intertidal to 3 fms. Seidler (1924, p. 120) erroneously reported this from the West Indies. Since this record is based on Grube's type, it should be Peru.

Halosydna latior Chamberlin*Halosydna latior* Chamberlin, 1919b, pp. 1-2; Hartman, 1938, p. 110.*Halosydna obtusa-cirrata* Treadwell, 1937, pp. 143-144, pl. 1, figs. 8-11.*Collections*.—Acc. 525, Acc. 542, Acc. 585, Acc. 622. 10 specimens.

Distribution.—Southern California to Lower California, Mexico. Low intertidal to 40 fms. *H. obtusa-cirrata* Treadwell was described from east of Cedros Island, Lower California. This is the same as Cerros Island, on the outer side of Lower California, along the northern half of the peninsula.

Halosydna parva Kinberg

Plate 21, Figs. 265-267

Halosydna parva Kinberg, 1855, p. 385; 1910, pp. 17-18, pl. 5, fig. 24;
Seidler, 1924, p. 116.

Polynoë mülleri Grube, 1856, p. 48; Augener, 1906, p. 119.

Polynoë clavata Grube, 1856, p. 47.

Collections.—22-33, 152-34, 374-35, 380-35, 610-37. 5 specimens.

Some individuals have a rust colored dorsal pigmentation, others sooty. The dorsum is marked with segmental dark transverse stripes; the prostomial antennae and palpi are dark.

The prostomium, without the prostomial peaks, is 6-sided, and a little wider than long. A shallow median sulcus extends throughout its length. Eyes are subequal in size. The median ceratophore is inserted broadly between the bases of the lateral ceratophores. The median style is 4 or 5 times as long as its base. Palpi are smooth, extending distally beyond the peristomial cirri.

The neuropodial setae are pale amber, disposed 16 to 20 in a fascicle, in 2 or 3 trim vertical rows. All are similar, subequal to one another, and distally bifid (pl. 21, fig. 267). The notopodial setae are much finer than the neuropodial setae, the dorsalmost shorter, blunter. Elytra have lateral fringe on the exposed ectal margin (pl. 21, fig. 266), and microtubercles over the surface (pl. 21, fig. 265), distributed most abundantly on the exposed part of the surface. Most of the surface has a finely reticulated pigmented pattern, least developed where the tubercles are largest.

Several individuals from Peru differ slightly in that the microtubercles are proportionately larger. A specimen from Santa Rosalia Bay, Lower California (610-37), has some of its neuropodial setae entire distally. It is very dark (preserved) throughout.

Augener (1906, p. 118) had occasion to reexamine the type of *Polynoë clavata* Grube and concluded that it and *H. mülleri* Grube were identical. An elytrum from the type of *P. clavata* (Augener, 1906, pl. 3, fig. 45) closely resembles one from a specimen from Independencia Bay, Peru (374-35). Grube gave "West Indies" as the type locality. Augener, however, corrects "dass diese von Callao [Peru] an der pacifisch-amerikanischen Küste stammt." The neuropodial setae are clearly bifid (pl. 21, fig. 267), the serrated rows distinct.

Halosydna virgini Kinberg (1855, p. 384) from Honolulu may be close to *H. parva*. Its identity is doubtful. Another closely related species is *Polynoë marginata* Grube (1876, p. 62) from Callao, Peru. Augener (1906, p. 119) reported the type missing from the museum at Copenhagen, where it was said to have been deposited.

Distribution.—Chile; Peru; Ecuador; Gulf of California, Mexico; Galapagos. Shore to 15 fms.

Halosydna brevisetosa Kinberg

Halosydna brevisetosa Kinberg, 1855, p. 385; 1910, p. 18, pl. 5, fig. 25; Monro, 1928c, pp. 311-312 (not Treadwell, 1902, p. 186; see Hartman, 1938, p. 110).

Polynoë brevisetosa Johnson, 1897, pp. 167-170, pl. 6, fig. 24, pl. 7, figs. 31, 40, pl. 8, fig. 46.

Lepidonotus insignis Baird, 1863, pp. 106-107.

Halosydna insignis Moore, 1908, p. 330; 1910, pp. 329-331; Berkeley, 1923, p. 212; Monro, 1928c, p. 311.

Polynoë insignis Johnson, 1901, pp. 387-388.

Lepidonotus grubei Baird, 1863, pp. 107-108; 1865, pp. 189-190.

Collections.—878-38, 882-38, 885-38, 886-38, 901-38, 902-38, 904-38, 906-38. Numerous individuals.

Distribution.—Alaska, south to southern California. Intertidal to 16 fms.

Halosydna johnsoni (Darboux)

Polynoë reticulata Johnson, 1897, pp. 170-172, pl. 7, figs. 32, 41, pl. 8, fig. 47 (not Claparède, 1868).

Lepidonotus johnsoni Darboux, 1899, p. 246, footnote.

Polynoë californica Johnson, 1901, p. 387.

Halosydna californica Moore, 1910, p. 331; Treadwell, 1914, pp. 180-181.

Halosydna macrocephala Essenberg, 1917, pp. 53-55, pl. 3, figs. 22-33.

?*Halosydna reticulata* Monro, 1928a, pp. 563-565.

Collections.—902-38, 903-38, 905-38, 906-38. 10 specimens.

This species was originally given a preoccupied name (see synonymy above). In a small footnote, Darboux (1899, p. 246) renamed it, but the note has apparently been overlooked. This name predates Johnson's revision (1901, p. 387).

Halosydna macrocephala Essenberg (1917, pp. 53-55, pl. 3, figs. 22-33) was separated from *H. californica* Johnson on differences in shape and size of the prostomium and the greater depth of the grooves of the palpi. These characters have questionable specific value. The elytra were described as lacking marginal fringe. In *H. johnsoni* there is a fringe, though often weak. In other respects the descriptions of these two agree reasonably well.

Halosydna reticulata Monro (1928a, p. 563) from the Galapagos Islands may represent more than one species, perhaps none of which is the same as *H. johnsoni*. The specimens investigated showed significant differences in the tuberculation of the elytra and the nature of the neuropodial setae.

Distribution.—Southern California. Intertidal to 290 fms. (Moore, 1910, p. 331). Common in *Crepidula* colonies, in Anaheim Slough, California.

Halosydna glabra, new species

Plate 4, Figs. 43-50

Collections.—444-37, 683-37, 688-37 (Holotype). 7 specimens.

Length of 25 segments about 24 mm, width with setae to 9 mm. Nephridial papillae from seventh segment, but not large before the tenth segment, from which they are conspicuous, pendulous, the distal end slightly widened, diffusely rust or sooty pigmented. Elytral margin entire, without fringe or papillae.

The prostomium is about as broad as long. The 4 eyes are black, the anterior pair slightly the larger, disposed at the sides of the widest part of the prostomium; posterior eyes are near the postectal margin of the prostomium. A shallow median sulcus divides the prostomial lobes. Prostomial antennae are dark, the median ceratophore thicker than the laterals and extending a little beyond them. The median style is about as large and long as the peristomial cirri and resembles them in general appearance. Lateral antennae are only about half as long as the median antenna. Palpi are dark, smooth save for transverse wrinkles of contraction; there are a pale subterminal enlargement and a terminal filament. They extend distally beyond the longest peristomial cirri. One individual (683-37) has palpi that are much longer, but they lack the contraction wrinkles.

Elytra 18 pairs, the first pair orbicular (pl. 4, figs. 43, 45), the others transversely oval (pl. 4, fig. 44). The first pair (and sometimes also the second) have two kinds of macrotubercles, (1) a translucent yellowish, slightly hooked, with terminal knobs, and (2) conical, white or opaque mound, lacking a stalk, ornamented with shallow convolutions (pl. 4, fig. 46). In addition, there are great numbers of microtubercles scattered more or less regularly over the surface. The area over the elytral scar is pale, with an irregular dusky ring surrounding it. More posterior elytra are smooth, except for a few microtubercles along the anterior margin, near the concavity (pl. 4, fig. 50). The surface is underlain with a fine reticulated mesh, that is darkest and coarsest in an area around the elytral scar. An area over the hilum is pale (pl. 4, fig. 44).

Parapodia are robust, fleshy; on median segments the cirrophores are about as heavy, and nearly as long, as the stout neuropodia. The notopodia are reduced, but with a projecting aciculum and a fascicle of fine setae. The dorsal cirrus is slender, tapering, with a slight subterminal thickened area and a dusky ring; it extends distally about as far as the neuropodial setae. Ventral cirrus is pale, short, tapers rapidly from a stout base and terminates in a slender prolongation not reaching to the end of the neuropodium.

Notopodial and neuropodial setae are each of one kind though of different sizes. There are 10 to 15 notopodial setae in a fascicle, including superior shorter (pl. 4, fig. 47) and longer, slenderer setae (pl. 4, fig. 49). The neuropodial setae are much coarser, longer, and include 12 to 15 in a supraacicular fascicle and 18 to 24 in a subacicular fascicle; the two fascicles form a continuous series of 3 or 4 vertical rows. They are bifid distally (pl. 4, fig. 48).

Halosydna elegans Kinberg (1857, p. 18) from the Galapagos Islands was described without elytral fringe. Later, Monro (1928a, p. 567) reported it from the Galapagos Islands, and added to the original meagre description. *H. glabra* differs from *H. elegans* particularly in having a greatly reduced notopodium, also the larger elytral tubercles are convoluted and do not have a flat top.

Holotype.—AHF no. 4.

Distribution.—Concepcion Bay, Gulf of California, Mexico; Piñas Bay, Panama. In coral and coralline zones, to 12 fms.

Halosydna, species A

Plate 4, Figs. 51-55

Collection.—719-37. One specimen.

General color pale flesh, but under low magnification the elytra are seen to have dispersed reticulated rust-colored blotches, that are darkest and most concentrated in anteriormost elytra, and more or less limited to an area over the hilum in posterior elytra. The dorsal cirri have a broad dark band subterminally. Setae and acicula are pale amber; palpi and prostomial antennae rust-colored.

The unique specimen is coiled, but measures about 27 mm long when stretched out. It includes 33 setigerous segments. The prostomium is lepidonotoid, with a shallow median sulcus throughout, the 4 subequal black eyes located at the sides and posterior margin of the prostomium.

There are 18 pairs of elytraphores. The elytra are more or less loosely attached, but most are still present. They completely cover the dorsum. The marginal fringe is limited to the external margin. The surface is ornamented with some large, button-like, soft papillae (pl. 4, fig. 54) most numerous on anterior elytra, but some are present throughout. In addition, the surface is diffusely covered with microtubercles each of which has a small horny projection. The rust-colored blotches, under high magnification, are seen to consist of numerous polygonal areas (pl. 4, fig. 55).

Parapodia subbiramous, the notopodium obsolete, inserted on the dorsal side of the neuropodium. It is provided with a small fascicle of about 12 to 15 short, notopodial setae, their free portions less than half as long as the free ends of the neuropodial setae. They include shorter, curved, denticulated, superior setae (pl. 4, fig. 53) and longer, slender, serrulated inferior setae (pl. 4, fig. 51). Neuropodia are robust, tapering slightly to a truncate acicular lobe from which the yellow aciculum projects a short distance. The neuropodial setae emerge from the lobe in about 2 trim vertical rows, and include about 25 setae in a median parapodium. They are minutely bifid at the tip (pl. 4, fig. 52), the accessory tooth nearly parallel to the main shaft. The transverse rows of serrations increase in size distally.

The elytral and setigerous structures of this specimen do not compare favorably with those of any known species of *Halosydna*. Furthermore, it originates from a locality (Consag Rock, upper end of the Gulf of California) which has not been biologically investigated heretofore for its chaetopod fauna.

Distribution.—Upper end of Gulf of California, Mexico. In 20-25 fms.

Halosydna, species B

Plate 22, Figs. 273-279

Collection.—617-37. One specimen.

A nearly complete specimen, with 32 setigerous segments, measures 17 mm long. It is pale throughout except for small brownish patches on the elytra. An oblong pale area over the hilum is bounded on its inner side by a sooty patch that blends gradually with the brown patches. Elytra and acicula pale amber.

The prostomium is somewhat macerated and turned under. It is about as broad as long, with a shallow median sulcus. A single pair of black eyes is near the posterior margin, but the anterior eyes might have become obliterated through maceration.

Elytra are fringed on their external margins, with a short, slender, trim fringe (pl. 22, fig. 274). The anterior margin is slightly excavate. There are no macrotubercles, but the surface is more or less uniformly covered with microtubercles; these have a circular base and a horny blunt cone (pl. 22, fig. 276). In addition there are irregular blotches of pigment (pl. 22, fig. 275). The entire surface is underlain by minute clear areas, smaller than the tubercles and regularly distributed.

The parapodia are subbiramous, the notopodia small, papillar, on the anterodorsal face of the neuropodia. About 12 longer, slender, serrulated notopodial setae project distally, beyond the middle of the neuropodial setae, and there are a few shorter, blunter superior notopodial setae. Neuropodia are robust, truncate distally (pl. 22, fig. 277), with longer larger setae in the superior fascicle (pl. 22, fig. 278) and similar smaller setae inferiorly (pl. 22, fig. 273). All are entire distally. The dorsal cirrostyles extend distally well beyond the notopodial setae.

The unique character of the neuropodial setae, with their long, smooth entire tips, and the tuberculation of the elytra do not favor the inclusion of this specimen with any known species of *Halosydna*.

Distribution.—San Juanico Bay, Gulf of California, Mexico, in 24 fms.

Genus **LEPIDONOTUS** Leach**Lepidonotus nesophilus** Chamberlin

Plate 7, Figs. 83-95

Lepidonotus nesophilus Chamberlin, 1919a, p. 75.

Collections.—148-34, 814-38, ?273-35. 9 specimens.

In these specimens the prostomium is clearly lepidonotoid, with a

shallow median sulcus, the prostomial antennae inserted terminally, 4 black eyes on the posterior half (pl. 7, fig. 83). The posterior border of the prostomium is overlapped by a pair of small lobes, median to the posterior pair of eyes. A single specimen from 273-34 differs in that the prostomium is slightly overlapped by a rounded median prolongation.

Elytral fringe is trim, short, closely spaced (pl. 7, figs. 84, 85), the reticulations are fine, mesh-like, the color disposed in minute spots (pl. 7, fig. 86). The first pair, or also the next 2 or 3 pairs, are ornamented with pale conical macrotubercles (pl. 7, fig. 87), their tips covered with numerous blunt spinelets (pl. 7, figs. 88, 90) in addition to numerous smaller tubercles. In a specimen from 148-34 these macrotubercles (pl. 7, fig. 89) are much like those shown by Chamberlin (1919a, pl. 4, fig. 5). In a specimen from 814-38 they are less sharply pointed (pl. 7, fig. 88). Elytra more posteriorly have fewer large tubercles, and appear almost smooth save for the numerous minute spine-like tubercles. These are especially abundant along the fimbriate margin. The microtubercles are pale, glistening, resembling oil droplets. The elytra are grayish green with a conspicuous white spot over the elytophore, as described by Chamberlin, but the setae are pale amber, not brown.

Dorsal cirri are long, slender, extending distally beyond the setae, the terminal filament long, a brown ring below the subterminal enlargement.

Notopodial setae are spinose, ranging from blunt, short, to tapering pointed. The longer setae are tapering, laciniole, with spinelets along 2 edges (pl. 7, fig. 95); the shorter setae are bluntly rounded distally. Neuropodial setae are of one kind in median parapodia; they have a well-developed subterminal tooth and 7 to 10 or 11 transverse rows of pectinae, the most distal row of pectinae with the largest teeth (pl. 7, figs. 93, 94). Neuropodial setae in the second segment are of two kinds, (1) superior, heavier setae with bifid tip (pl. 7, fig. 92) and (2) paler, slenderer, tapering, inferior setae (pl. 7, fig. 91).

On the whole, these specimens agree with Chamberlin's description. The prostomium, however, is more typically lepidonotoid than originally shown. The macrotubercles are variable in size and form, from one individual to another. There is great similarity, however, in the shape of the elytra, the proportions and parts of the notopodial and neuropodial setae.

Distribution.—Galapagos Islands, Tenacatita Bay, western Mexico. Intertidal to 75 fms.

Lepidonotus hedleyi Benham

Lepidonotus hedleyi Benham, 1915, pp. 181-183, pl. 38, figs. 1-7;
Fauvel, 1932, p. 14; Okuda, 1937, pp. 267-268, fig. 8.

Collection.—549-36. One individual.

The dorsum of anterior segments is traversed by a broad band of brown pigment, segmentally arranged. Prostomial prolongations, median ceratophore including the style, and the palpi, have a similar dark color.

The prostomium is a little wider than long, a median sulcus separates the lobes. The 4 eyes are black, conspicuous, the anterior pair at the broadest part of the prostomium. Elytral margin is entire; its surface is provided with widely separated blunt chitinous spines, and pigmented patches that are interspersed with clear, mesh-like areas. The elytra extend laterally about as far as the neuropodia but they do not nearly cover the neuropodial setae.

Notopodial setae are transversely serrated; most of them are longer, distally pointed, but a few in the superior part of the fascicle are short, slightly arcuate. The notopodial setae of the first parapodium (segment 2) are all of the pointed kind. Neuropodial setae are dark yellow; typically all are bifid, with a rather short, serrated area. In the first parapodium all of the neuropodial setae are long, pointed, without a subterminal tooth.

Distribution.—Australia; Indian Ocean; South Sea Islands; Gulf of California, east of Angel de la Guardia Island. Intertidal to 40 fms.

Lepidonotus versicolor Ehlers

Plate 5, Figs. 56, 59-61

Lepidonotus versicolor Ehlers, 1901, pp. 50-52, pl. 3, figs. 1-9 (not Augener, 1922, pp. 173-174, fig. 1).

Collections.—529-36, 728-37. 2 specimens.

Length to 25 mm; width 9 mm with, 7 mm without parapodia. Elytra firmly attached, covering the dorsum but leaving the neuropodial setae exposed. In 728-37, only the first 2 pairs of elytra have conspicuous surface tubercles (pl. 5, fig. 56). In 529-36, the first 7 pairs of elytra are thus covered. Their margin is entire, or the first few pairs of elytra have a row of sparse, short, inconspicuous fringes (pl. 5, fig. 56). The first few pairs of elytra have numerous, pale yellow subglobular tu-

bercles, which under magnification resemble hedge apples; those on the first pair form a closely set row around the periphery of the scale, and others are scattered over the dorsal surface. On more posterior elytra only a few of the tubercles are large, most of them are much smaller and depressed, causing the surface to look pitted. An area over the hilum is pale, the surface at the sides of, and posterior to, this area is usually mottled with gray pigment.

The prostomial prolongations, their cirri, the median ceratophore and its style are dusky. There are 4 eyes, the anterior pair at the sides, near the middle of the prostomium. The other pair is near the posterior margin of the prostomium, somewhat concealed by the overhanging fold from the succeeding segment (pl. 5, fig. 61). It may be for this reason that Ehlers showed only 2 eyes (1901, pl. 3, fig. 2).

Neuropodial setae are pale amber, notopodial setae light yellow. The dorsal and ventral acicula are light brown and project from their respective lobes a short distance. The dorsal and ventral setae are each of only one kind. The former are transversely serrated, some have a blunt tip and are shorter, others are longer, pointed. The neuropodial setae are simple, without subdistal tooth or with a small subterminal swelling. In the first parapodium, the dorsalmost (pl. 5, fig. 59) and ventralmost (pl. 5, fig. 60) neuropodial setae are simple but the dorsalmost are thicker and thickened subdistally. There are no smooth notopodial setae, shown by Ehlers (1901, pl. 3, fig. 6), such as characterize the genus *Thormora*. In other respects these individuals agree well with the description and figures of this species.

In spite of the great differences in the bathymetric ranges of the two individuals herein considered (165 fms. and shore) there are no significant differences between them. The tuberculation of the elytra is less marked in the intertidal individual, but the tubercles do not differ in their details.

The identity of *L. versicolor* Ehlers and *L. argus* (Quatrefages) from Australia appears not unlikely. Both have elytra with entire margins and subglobular surface tubercles; the neuropodial setae are entire distally, including those in the first parapodium. In *L. argus*, however, the larger tubercles are sparsely covered with spinelets (Fauvel, 1917, pl. 4, fig. 9), compared to the condition in *L. versicolor* (Ehlers, pl. 3, fig. 5).

Distribution.—Juan Fernandez, western South America; Gulf of California, lower half, Mexico. Intertidal to 165 fms.

Lepidonotus furcillatus Ehlers

Plate 5, Figs. 57, 58

Lepidonotus furcillatus Ehlers, 1901, pp. 52-54, pl. 2, figs. 1-8; Augener, 1913, pp. 102-103; Seidler, 1924, pp. 64-66.

Lepidonotus arenosus Ehlers, 1901, pp. 49-50, pl. 2, figs. 9-12.

Collections.—212-34, 171-34, 429-35, 863-38. 5 specimens.

The remaining elytra, on segments 17 and 19 (212-34), are marginally fringed and have numerous, low, rounded yellow tubercles over the dorsal surface, and teardrop-shaped tubercles posterior to the elytral scar (Ehlers, 1901, pl. 2, fig. 11). Notopodial and neuropodial setae are pale. The latter are bifid subdistally. The first parapodium contains some neuropodial setae that are tapering, pointed (pl. 5, fig. 58), others that are distinctly bifid (pl. 5, fig. 57).

A single posterior fragment from Bahia Honda retains one of the last pair of elytra. This has, in addition to the characteristic blunt tubercles, 4 blunt, slightly hooked, tall yellow spines along the posterior border. The facial tubercle is elongate, papillar.

Augener (1913, p. 102) reexamined both of Ehlers' types and concluded they were identical, in spite of differences in the form of the surface spines on the elytra. The specimens in the collections bear out this conclusion, since some of the elytra have tall, slightly hooked spines, others lack them. None, however, have bifid spines such as shown by Ehlers (1901, pl. 2, fig. 5).

Distribution.—Western South America, from Colombia south to Chile; southwest Australia. Intertidal to 55 fms.

Lepidonotus crosslandi Monro

Plate 5, Figs. 62-69

Lepidonotus crosslandi Monro, 1928a, pp. 553-555, figs. 1-4.

Collections.—375-35, 376-35. 6 specimens.

The general color of the preserved (alcohol) specimens is fulvous; most of the elytra have a characteristic broad, dusky crescent around the posterior half of the elytral scar which gradually fades out at the posterior margin. All of the specimens are broken across, transversely, near the middle. Total length is 8 to 17 mm.

The prostomium is typically lepidonotoid, with 4 small, black eye spots on the posterior half and widest part (pl. 5, fig. 62). The anterior edge of the second segment projects forward over the posterior margin of the prostomium in the form of a pair of short flaps.

The elytra are firmly attached and sparsely fringed on the outer, postlateral edge. The surface is uniformly covered with numerous trim, small flattened tubercles, approximately of two sizes (pl. 5, fig. 67), the smaller colorless, the larger yellow. Only the second and third pairs of elytra are slightly excavate at their anterior margins (pl. 5, fig. 69), others are subrectangular or oval in shape (pl. 5, fig. 68). The surface is pale, contrasting in color with the darker, amber-colored tubercles which, in color, resemble the neuropodial setae. The outer margins of the elytra extend laterally beyond the neuroacicular lobes, but they leave uncovered most of the free ends of the ventral setae and the distal halves of the dorsal cirri.

In median segments the neuropodial setae are almost or quite simple (pl. 5, fig. 66) but a few in each fascicle, particularly the superior-most, usually have vestiges of a subterminal tooth (pl. 5, fig. 65). The tips are stouter than Monro found them in specimens from Panama. All of the neuropodial setae in the second and third segments, save a few smaller pointed inferiormost (pl. 5, fig. 64), are distinctly bifid (pl. 5, fig. 63) differing therein from the specimens originally described, in which only the second segment has bifid setae, and the secondary tooth is less conspicuous.

The first parapodium has about 17 neuropodial setae, the second about 18, and a median parapodium about 20 to 25, the number increasing gradually from anterior to median regions. In Monro's specimens there were only about 6 neuropodial setae in median segments. On the whole, the setae are stouter in the specimens from Peru than indicated in those from Panama.

These collections are referred, with some doubt, to *L. crosslandi* Monro, for the reasons indicated above. The differences indicated above may or may not fall within the range of variation observable in some species of the Polynoidae.

Distribution.—Panama; Peru. Intertidal to 7 fms.

Lepidonotus hupferi Augener

Plate 6, Figs. 78-82

Lepidonotus hupferi Augener, 1918, pp. 133-136, pl. 2, figs. 7-11;
Seidler, 1924, pp. 69-70.

Collections.—125-33, 210-34, 448-35, 683-37. 13 specimens.

Length 10 to 17 mm. Elytra completely cover the body. General color pale, but under low magnification the elytra are seen to have an

irregular reticulated pattern of rust-colored blotches (pl. 6, fig. 82). An individual from La Libertad, Ecuador, has the rust-colored pigment replaced by sooty color. Base of palpi dark, appearing tucked in at its insertion.

Elytra are neatly fringed on their external margins. Median elytra oval, with a slight excavate anterior margin. The surface is covered with minute, chitinous tubercles, with a broad squat base and a slender stalk. Scattered irregularly over the surface but leaving a pale area over the elytral attachment are rust-colored blotches. Under high magnification they are seen to be mesh-like because of clear, cellular areas among them (pl. 6, fig. 78).

Notopodial setae are fine, short, serrated. They number about 30 in a median parapodium, and do not extend distally beyond the neuropodium. Neuropodial setae are heavier, longer, including about 20 supraacicular and over 50 subacicular in a median parapodium. Distally they have a minute subterminal tooth, but the inferiormost setae tend to be entire (pl. 6, fig. 81). This weakly bifid condition of the neuropodial setae agrees with the condition shown by Augener, and is in contrast to the condition shown by Kinberg for *L. caeruleus* from Brazil (1910, pl. 4, fig. 16). The first 2 or 3 neuropodia have setae that are distinctly bifid, those of the first parapodium are more distinctly toothed and have a longer serrulated blade (pl. 6, fig. 79) than those in the following segments (pl. 6, fig. 80).

Distribution.—British Gold Coast, Africa; western Mexico; Panama; northwestern South America. Intertidal to 12 fms.

Lepidonotus caelorus Moore

Lepidonotus caelorus Moore, 1903, pp. 412-414, pl. 23, fig. 12; 1905, pp. 546-547, pl. 36, figs. 36, 37; 1910, pp. 333-334; Berkeley, 1923, p. 213 (see Hartman, 1938, p. 108, for additional synonymy).

Collections.—874-38, 891-38, 894-38, 900-38. 5 specimens.

Distribution.—Northwest and northeast Pacific. Intertidal to 40 fms.

Lepidonotus pomareae Kinberg *panamensis*, new subspecies

Plate 6, Figs. 70-77

Collections.—863-38 (Holotype), 254-34. 3 individuals.

A larger specimen, about 38 mm long, consists of 27 segments. The

body is strongly arched in the middle. Greatest width at the sixteenth segment is 9 mm between the nephridial papillae, and 16.2 mm including the setae.

The prostomium is largely hidden between the first pair of parapodia, and by a broad, fleshy, convex lobe projecting forward over its posterior half. The lateral antennae are inserted terminally, the styles long, slender, but not extending distally as far as the median antenna. Median ceratophore is long, cylindrical; its distal end projects beyond that of the lateral antennae, its style similar in shape to that of the lateral antennae, but a little longer. Eyes 4, dark, disposed on the posterior half of the prostomium, the anterior pair at the sides of the widest part of the prostomium, the posterior pair near the postectal margin. Palpi are long, stout, exceeding in length the antennae and dorsal cirri. They have a few longitudinal rows of minute papillae on the dorsal side.

The elytra completely cover the dorsum. They are firmly attached, deeply imbricated, and overlap those of the opposite side. Each has a conspicuous marginal fringe, and an elongate tuft at the inner ectal margin (pl. 6, figs. 70-72). The fringes are in most instances overgrown so as to appear much thicker than they actually are. The surface is richly covered with high, broad-headed tubercles on the exposed portion, and smaller, conical or somewhat curved tubercles and knobbed prominences on other portions. A few scattered hairs, resembling the marginal fringe, but shorter, are scattered among the tubercles, especially on the exposed parts of the elytra. The tall, large headed tubercles have their terminal disks excavate in the middle (pl. 6, figs. 73, 74), and the entire cap is covered with numerous slender spines. The stalk from which the tall tubercle arises is smooth and expands at its base. A smaller individual from the same locality (Bahia Honda) has only a few of the conspicuous macrotubercles.

Parapodia are subbiramous, the notopodium papillar, arising from the dorsal side of the neuropodium. Each has a stout, dark amber aciculum and numerous (about 20 or more) slender, spinose setae, most of them overgrown, but a few showing the well developed transverse rows of spinulae. A few (1 to 3) of the dorsalmost notopodial setae are shorter and blunter (pl. 6, fig. 76); most of the others have a similar basal portion, but are greatly elongate distally, with an attenuate tip.

The neuropodium is stout, deep, subtruncate, the acicular and post-acicular lobes not notably different from one another. About 30 to 40

copper-colored stout setae (pl. 6, fig. 77), disposed in 4 or 5 irregular longitudinal rows, emerge above and below the aciculum. The dorsal cirrus is inserted on a broad, basal cirrophore, its style long, slender, extends distally beyond the terminal ends of the setae. Ventral cirri are short, cirriform, tapering, and do not extend distally to the end of the neuropodium (pl. 6, fig. 75).

Nephridial papillae are cylindrical, present between segments 7 and 25, or to the second last setigerous segment. Anal cirri are long, slender, about as long as the last 4 segments.

These individuals resemble *Lepidonotus pomareae* Kinberg, from the Hawaiian Islands. Both have deep, truncate neuropodia, the elytra with heavy marginal fringe including a postectal tuft. In the Panama form, however, the elytra are conspicuously covered with numerous, large headed, high tubercles, the sixth pair of elytra are rectangular, not triangular, and the total length is over 35 mm as against 13 mm specified for *L. pomareae*.

Holotype.—AHF no. 5.

Distribution.—Bahia Honda, Panama. In depths of 15 to 50 fms.

Genus **LEPIDAMETRIA** Webster

Lepidametria virens (Blanchard)

Plate 8, Figs. 105-110

Polynoë virens Blanchard, 1849, p. 16, fig. 2; Grube, 1876, p. 60.

Lepidasthenia irregularis Ehlers, 1901, pp. 54-55, pl. 3, figs. 10-16;

Augener, 1924, pp. 291-292.

Lepidametria virens Monro, 1928a, p. 562.

Collections.—167-34, 169-34, 213-34(?), 182-34, 315-35, 396-35, 769-38. 10 specimens.

Length to 80 mm or over; number of segments over 72. Dorsum with transverse dark bands across the middle of the segments, and a broad band, almost as wide as the segment is long, over the elytraphoral area, median to the parapodial base. Parapodia are pale, prostomium pale rust color; the elytra are dusky on their proximal halves, pale along their outer portions.

The prostomial lobes are well separated anteriorly. The 4 black eyes are small and limited to the posterior half of the prostomium. Palpi are very long, extending distally far beyond the antennae (pl. 8,

fig. 110). The first 3 sets of dorsal cirri are elongate, the first group the longest. From the fourth segment the dorsal cirri diminish in length but become thicker basally (pl. 8, figs. 106, 105).

Elytra are small, rounded, leaving a broad dorsal area exposed. They do not overlap those of succeeding pairs. They are inserted in pairs throughout.

Neuropodial setae, including those in anterior segments, have a subterminal tooth that is closely appressed to the main fang (pl. 8, figs. 107 to 109) and notably longer than that shown by Ehlers (1901, pl. 3, fig. 17). The dorsal cirri, from about the thirtieth segment, are broad, their basal parts filled with gonadial products. Some of the specimens include a tangle of long, tentacular filaments, perhaps of a terebellid, and were perhaps commensal.

Distribution.—Chile; Ecuador; western Mexico; Galapagos. Intertidal to 20 fms.

Lepidametria gigas (Johnson)

Plate 8, Figs. 99-104

Polynoë gigas Johnson, 1897, pp. 172-175, pl. 7, figs. 33, 42, pl. 8, figs. 48, 49.

Lepidasthenia gigas Moore, 1909, pp. 241-242; Treadwell, 1914, p. 183.

Lepidametria gigas Seidler, 1924, pp. 145-146; Monro, 1936, pp. 92-93, fig. 8.

Collection.—148-34. One specimen.

Length about 30 mm, number of segments 65. Elytra completely cover the dorsum and are present in pairs throughout. They are subcircular, smooth, with entire margin, and have a greenish gray mottled pattern.

Neuropodia are stout, distally acuminate (pl. 8, figs. 103, 104). Dorsalmost neuropodial setae are notably heavier and darker than those more ventrally. A few of the superiormost are distally entire (pl. 8, fig. 99) but most of them have a subterminal tooth. Median and inferior setae are bifid, the secondary tooth small as compared with the main fang (pl. 8, fig. 100). Anteriormost segments have a few (the fourth parapodium with 2) weakly serrated, pointed notopodial setae (pl. 8, fig. 102), and bifid neuropodial setae (pl. 8, fig. 101).

Distribution.—Southern California; South Georgia (Monro); Galapagos. Intertidal to 25 fms.

Genus **HOLELEPIDA** Moore

Body elongated, consisting of numerous segments. Prostomium with antennae inserted subterminally; eyes 4; a large nuchal flap projecting over posterior part of prostomium (pl. 9, fig. 111). Notopodial setae smooth, of one kind; neuropodial setae in anterior segments of two kinds, (1) a small superior fascicle of fine, bent, denticulated setae, and (2) a larger inferior fascicle of larger, straight setae toothed along one edge.

Holelepida veleronis, new species

Plate 9, Figs. 111-118

Collections.—549-36 (Holotype), 532-36. 2 specimens.

A larger, anterior fragment (549-36) consists of 20 anterior segments, its length about 14 mm, width 3.3 mm without, 7 mm with parapodia, and 10 mm with setae at the sixteenth segment.

The prostomium is more than twice as broad as long, the lobes separated by a wide shallow median sulcus. A well developed nuchal flap extends forward reaching nearly to the base of the median ceratophore (pl. 9, fig. 111). Eyes are large, lenticulated, the anterior pair at the widest part of the prostomium, the posterior pair adjacent to the anterior, but nearer together. Prostomial antennae 3, ceratophores long, slender, styles subequal to one another, similar in shape and size to the peristomial cirri. Palpi are stout at base, long, tapering, extend distally beyond the tips of the antennae. A longitudinal groove extends lengthwise on the dorsal side.

Elytra pale, soft, the margin without fringe or papillae, greatly wrinkled and folded at the lateral edges; the surface smooth save for minute glistening microtubercles dispersed over the surface.

Parapodia elongate, directed laterally at sides of body. The second (first elytriphorous) segment resembles those following except that its ventral cirrus is much longer (pl. 9, fig. 118). The notopodial and neuropodial setae resemble those in more posterior podia except that some superior neuropodial setae are somewhat bent (pl. 9, fig. 117). Notopodia are reduced, papillar, provided with aciculum and from 10 to 15 stiff, rod-like setae. The dorsal cirrophore is long; it extends distally nearly to the middle of the dorsal setae; its style is much longer, slender, reaching well beyond the tips of the neuropodial setae (pl. 9, fig. 112).

Neuropodia have long, pointed acicular lobes and shorter, rounded postsetal lobes. The long, triangular acicular lobe extends laterally almost one third as far as the longer neuropodial setae (pl. 9, fig. 112). Ventral cirrus is slender, cirriform, inserted on the proximal third of the ventral face of the parapodium and hardly extends to the base of the inferiormost setae.

Notopodial setae are of one kind, slender, tapering, rod-like, with a row of minute teeth along one edge (pl. 9, fig. 114). Neuropodial setae are of two kinds, (1) slenderer, supraacicular, with few in a fascicle, and (2) heavier, with a long stem and a distal expanded portion provided with some obscure teeth on the cutting edge (pl. 9, fig. 115) and bifid tip (pl. 9, fig. 113). In a few anterior segments a small superior fascicle includes setae that are smaller, bent, the serrations not distinct.

A smaller, perhaps juvenile, posteriorly nearly complete specimen (532-36) consists of 34 segments, is about 10 mm long and 1.2 mm wide without parapodia. It resembles the larger piece, but is paler and the eyes are not lenticulated. Both specimens have the proboscis protruded a short distance.

Only 2 species of this small genus have heretofore been described. *H. magna* Moore (1905, p. 541) was dredged in 95-110 fms. from the Gulf of Georgia and southeastern Alaska, and later reported from British Columbia (Berkeley, 1923, p. 214). *H. magna* differs from *H. veleronis* in that it lacks the long parapodial lappets, the setae are more distinctly serrated, the prostomium is different (see Moore, 1905, pl. 35, figs. 24-29).

Hololepida australis Monro (1936, p. 93) was described from the vicinity of the Falkland Islands in depths of 135-267 meters. It differs from *H. veleronis* in having a different kind of nuchal hood, the setae are otherwise, and parapodial structures differ. *H. australis* measures 90 mm for 38 segments, *H. veleronis* is only 14 mm for 20 segments.

Hololepida veleronis has smooth setae and soft white scales that recall those of commensal polynoids. No notes were made as to its color in life, or its association, if any.

It is named for the motor cruiser, *Velero III*, during a cruise on which these collections were made.

Holotype.—AHF no. 6.

Distribution.—Near Angel de la Guardia Island (Holotype), and San Francisquito Bay, Gulf of California, Mexico. In 20 and 40 fms.

Hololepida, species

Collection.—148-34. One fragment.

A single macerated fragment of 27 segments is about 20 mm long and 9 mm with setae. The prostomium has a nuchal hood, but its parts are crushed and out of normal shape. There are 2 large eyes on each side, more or less fused to one another.

Notopodial setae are acicular, nearly smooth except for minute serrations along one edge, and nearly as thick as the neuropodial setae, but apparently heavier because of their cylindrical shape. Neuropodial setae have expanded, flattened distal portion, the tips entire but slightly falcate, the cutting edge finely serrated.

The neuropodial lobes are less thickened distally than in *H. veleronis* (see above), the dorsal and ventral margins nearly parallel, but the distal edge is obliquely truncate, beyond which the acicular lobe projects.

Distribution.—Albemarle Island, Galapagos, in 12-15 fms.

Genus THORMORA Baird

Differs from *Lepidonotus* Leach in that some of its notopodial setae are smooth, lancet-like, others are simple, serrated.

Thormora johnstoni (Kinberg)

Plate 7, Figs. 96-98

Lepidonotus johnstoni Kinberg, 1855, p. 384; Grube, 1876, p. 60; Chamberlin, 1919a, p. 74.

Lepidonotus (Thormora) johnstoni Seidler, 1924, p. 92.

Thormora johnstoni Monro, 1928a, p. 556; 1928b, p. 467.

Collections.—76-33, 194-34, 217-34, ?414-35, 450-35, 525-36, 530-36, 558-36, 634-37, 683-37, 789-38, 878-38, 904-38. 16 specimens.

First pair of elytra pale save for punctate disks, others with exposed portion dark (pl. 7, fig. 97) due to small polygonal areas interspersed among the punctate disks (pl. 7, fig. 98). The prostomium (pl. 7, fig. 96) resembles that of *Polynoë taeniata* Ehlers (1887, p. 51) later referred to *Thormora* (Seidler, 1924, p. 92) but the demarcation between the prostomium and prostomial peaks is much less abrupt. The palpi are not ciliated. In *L. socialis* Kinberg (1855, p. 383) the elytral margin is fringed.

Distribution.— Panama; Galapagos Islands; Hawaiian Islands; Gulf of California; southern California north to Anacapa Island; Colombia (?). Littoral to 20 fms.

Subfamily **Harmothoinae** Seidler

Genus **HARMOTHOË** Kinberg

Harmothoë hirsuta Johnson

Harmothoë hirsuta Johnson, 1897, pp. 182-183, pl. 6, figs. 27-29, pl. 7, fig. 38, pl. 8, fig. 53; Treadwell, 1906, p. 1154; Moore, 1910, pp. 350-351; Treadwell, 1914, p. 182.

? *Harmothoë hirsuta* Moore, 1908, pp. 334-335; Gravier, 1911, pp. 87-88; Chamberlin, 1919a, pp. 51-54, pl. 2, figs. 2-8, pl. 3, fig. 1; Monro, 1928a, pp. 558-559, fig. 8 (not Ehlers, 1901, p. 42).

The larger elytral macrotubercles occur in as many as three rows along the posterior margin. They are widest distally and have many small spinelets on the crown (Johnson, 1897, pl. 6, figs. 27-29). Thus they differ from the tapering, falcate spines, without spinelets, shown by Monro (1928, p. 59, fig. 8). The neuropodial setae are distinctly bifid, the subterminal tooth well below the main fang, and appressed to the main stalk.

Harmothoë hirsuta Moore (1908, p. 334) referred to 3 specimens taken from Port Townsend, Alaska, in 15-16 fms. Moore, at that time, commented on the differences observable between these and the types from southern California. One of these specimens was later made the type of *Eunoë barbata* Moore (1910, pp. 350-351). Whether the others are *H. hirsuta* is not certain because the elytra were said to lack the polygonal areas.

H. hirsuta Ehlers (1901, p. 42) from Tumbes, Chile, was later made the type of *H. anderssoni* Bergström (1916, p. 286).

Harmothoë hirsuta has been reported from the Antarctic, in 150 meters (Gravier, 1911, pp. 87-88). This record, because of its great distance from the type locality or other authentic records for the species, should perhaps be reinvestigated.

Harmothoë hirsuta Chamberlin (1919a, pp. 51-54, pl. 2, figs. 2-8, pl. 3, fig. 1) was based on specimens in which all elytra had been lost. The prostomial and setal outlines agree reasonably well with the description of Johnson.

Distribution.—Southern California; Panama. Intertidal.

Harmothoë exanthema (Grube)

Polynoë exanthema Grube, 1856, p. 46.

Polynoë vesiculosa Grube, 1878a, p. 514.

Harmothoë exanthema Bergström, 1916, pp. 287-288, pl. 3, fig. 5;
Monro, 1936, p. 85. (See Bergström, 1916, for additional synonymy.)

Collections.—273-34, 372-35, 384-35, 385-35, Perdita Island, Gulf of California. 17 specimens.

Most individuals are characterized by having a pair of longitudinal black stripes at the sides, over the dorsal surface of the parapodia, and a transverse dark band across each anterior segment and on every second or third segment more posteriorly. The elytra have some large, globular vesicles with a terminal filament (see Bergström, 1916, pl. 3, fig. 5) distributed chiefly along the posterior margin. There are, in addition, numerous microtubercles over the entire surface. Marginal cilia are few, weak, reduced to a short external area. The anterior eyes are inserted ventrolaterally, slightly anterior to the widest part of the prostomium.

Neuropodial setae include both simple and bifid, in the same fascicle. The notopodial setae are distally entire, serrated, some of them are heavier than the neuropodial setae.

Distribution.—Southern and western South America, north to the Gulf of California, Mexico. Subintertidal to 75 fms.

Genus EUNOË Malmgren

Eunoë senta (Moore)

Plate 10, Figs. 128-133

Gattyana senta Moore, 1902, pp. 259-263, pl. 13, figs. 1-13; 1908, p. 337; 1910, pp. 361-362; Treadwell, 1906, p. 1154; Berkeley, 1923, p. 216.

Collection.—874-38. 3 specimens.

Length 18 to 22 mm, width 6 mm with, 4 mm without parapodia, 8 mm with setae. Prostomium pale, with 4 dark eyes on the posterior half; prostomial antennae dark brown. The first segment has a few stout setae resembling the more posterior blunt notopodial setae. The second segment (first parapodial) has 2 well-developed setigerous fascicles. Palpi and dorsal cirri are hirsute.

The elytra are conspicuously covered with furcated spines, that increase in size from anterior to posterior margins. The smallest spines are knob-like to minutely bifurcated (pl. 10, fig. 133), the largest multipronged (pl. 10, fig. 132). There are a few long, marginal cilia along the ectal margin.

Notopodial setae range from shorter, slightly arcuate, dorsalmost (pl. 10, fig. 130) to long, straight, tapering setae (pl. 10, fig. 131). Neuropodial setae are slightly falcate, with entire tip, the length of the serrated region decreasing from superiormost (pl. 10, fig. 128) to inferiormost (pl. 10, fig. 129).

Distribution.—Alaska, south to California (dredged). Moore's original record, North Greenland (1902, p. 263), was later corrected to read Icy Cape, Alaska (1905, p. 525). The specimens mentioned above came from near Anacapa Island, off central California, in 45 fms.

?*Eunoë barbata* Moore

Eunoë barbata Moore, 1910, pp. 334-338, pl. 28, figs. 1-6; Treadwell, 1914, p. 183.

Collection.—885-38. One specimen.

A single specimen, about 18 mm long, resembles *E. barbata* Moore in some respects, but the notopodial setae are more pointed, and the smooth distal end proportionately longer; also, the elytra lack the large, heavily prickled spines. The body is pale cream color, with a segmentally arranged, dark pattern, consisting of a pair of larger patches over the middle of the segment, a similar and smaller pair just posterior to the larger patches and nearly proximal to them, and a pair of more widely separated triangular spots just anterior to the segmental groove. The dorsal cirrostyles are dark, the nuchal prolongation dusky.

The few elytra remaining are, on the whole, less spiny than Moore has indicated, and the larger prickly tubercles are few, only 1 or 2 on an elytrum; the finer tuberculation is, however, as figured by Moore (1910, pl. 28, figs. 4-6).

Distribution.—Puget Sound; Monterey Bay, California. In depths of 45 and 861-1062 fms. The notes above are based on a specimen from San Luis Obispo Bay, California, in 40 fms.

Genus **LAGISCA** Malmgren? **Lagisca multisetosa** Moore

Lagisca multisetosa Moore, 1902, pp. 267-269, pl. 14, figs. 29-36; 1910, pp. 340-341; Berkeley, 1923, p. 215.

Collection.—874-38. 2 specimens.

The material at hand does not permit the certain identity with the species indicated. Moore (1910, p. 341) has already commented on the possible range of variation in this species, and the need for a revision of species belonging to this genus.

Augener (1913, pp. 207-209) considered *Lagisca multisetosa* a questionable synonym of *Harmothoë aspera* Hansen, from the North Sea. Annenkova (1937, p. 152), perhaps at this suggestion, reported *H. aspera* from the North Sea, and considered *L. multisetosa* identical with the form from the North Sea. Until more collections are available, it will be difficult to conclude what the relations are between the north Pacific and the north Atlantic forms.

Distribution.—North Pacific, south to Lower California (Moore), in 40 to 1,400 fms. The type locality was first given as North Greenland, but later corrected to Icy Cape, Alaska (Moore, 1905, p. 525).

Genus **POLYNOË** Savigny, sensu Kinberg

Body long, consisting of numerous segments. Prostomium harmothoid, the lateral antennae inserted ventrally. Elytra 15 pairs, limited to the anterior portion of the body, the posterior segments uncovered. Notopodial setae more or less delicately serrated or quite smooth; neuropodial setae with transverse serrations, tip bidentate or unidentate.

Polynoë veleronis, new species

Plate 10, Figs. 121-127

Collections.—405-35, 834-38, 835-38 (Holotype). 6 specimens.

Length 30 to 35 mm, width 4.5 mm without, 6.0 mm with parapodia; number of segments 50 to 60, the last 18 or more left uncovered by the elytra. General form elongate, depressed, the sides more or less parallel.

Prostomium harmothoid, the 2 lobes well separated in their anterior halves but only weakly posteriorly, terminating anteriorly in a pair of acuminate prostomial peaks (pl. 10, fig. 121). Eyes 4, small, black, the

anterior much the larger, directed ventrolaterally, on the anterior third of the prostomium; the posterior smaller, nearer together, on the posterior third of the prostomium. Facial tubercle conical, with blunt tip, visible only in ventral view.

Palpi and all cirriferous styles have minute papillations; they taper distally with only a slight, or no, subterminal enlargement.

Elytra 15 pairs, the first pair subcircular (pl. 10, fig. 123), others oval in shape. The margin is entire, without fringe, papillae or crenulations. The surface is smooth, dark brown over most of the area, but with a pale irregular circular area between the elytral scar and the posterior margin, and a pale area where the preceding one overlaps the anterior margin. A few minute, low, yellow microtubercles are distinguishable in the pale area.

Parapodia subbiramous, the notopodium reduced, provided with a yellow aciculum that projects some distance beyond the lobe, and 6 to 10 pale, serrated setae. Neuropodium obliquely truncate, with a small fleshy, triangular, preacicular lobe at the dorsoectal edge (pl. 10, fig. 124). Dorsal cirrus long, the cirrophore extends laterally as far as, or beyond, the notopodial lobe, the styles are dark at the base and extend distally beyond the neuropodial setae. Ventral cirri pale, small, tapering, inserted on the distal half of the ventral side of the neuropodium. Ventral cirrus of second segment elongate (pl. 10, fig. 122).

The notopodial setae are as thick as the neuropodials, distally blunt, with serrated edge (pl. 10, fig. 125). The notopodium of segment two has about 20 to 25 setae which resemble those in more posterior segments. The neuropodial setae are transversely serrated. They include a superior fascicle of 6 to 10, with bifid tips, and a long serrated region (pl. 10, fig. 127). The inferior fascicle contains 40 or more setae with shorter, serrated edge and bifid tip (pl. 10, fig. 126). The neuropodium of segment two has about 6 superior setae resembling those more posteriorly but more tapering and with an obscure bifid tip, and a larger inferior fascicle of 25 to 30 pointed, serrated setae. Notoacicula and neuroacicula are pale yellow and project beyond the acicular lobes.

Polynoë veleronis differs from *P. antarctica* Kinberg in that its notopodia are provided with numerous setae instead of only 2 to 5 smooth setae, and the neuropodia are less oblique. Several other species of *Polynoë* have been described from western South America, *P. chilensis* and *P. fasciculosa* Blanchard (1849, pp. 15, 17) both from Chile, and *P. violacea* Schmarda (1861, p. 154) from Chile. These are too in-

completely known to permit comparison. *P. chilensis* was later reported by Grube (1876, p. 60) who reported the presence of 16 pairs of elytra, but figured 29 pairs, hence the latter is clearly not the species described above.

Holotype.—AHF no. 7.

Distribution.—Independencia Bay, Peru; Gorgona Island, Colombia. Intertidal to 21 fms.

Family Sigalionidae

The Sigalionidae are largely to be obtained only by dredging. Only a single species, *Sthenelais fusca* Johnson, is known to exist in the intertidal of the northeast Pacific. Many of the known species occur in depths of 500 fms. or over, a few in the subintertidal. The work of the Allan Hancock Pacific Expeditions was done largely in depths of 100 fms. or less, hence the collections are unusually rich in little known, or new, species from shallower waters. Fourteen species in 5 genera are represented. Of these, 1 genus (*Eusigalion* Augener) has not heretofore been known outside of western Africa, and 10 species or subspecies are new to science (see below).

Six genera (*Leanira*, *Pholoë*, *Psammolyce*, *Sigalion*, *Sthenelais*, and *Sthenelanella*) have been previously reported. Two of these (*Pholoë* and *Sigalion*) are not represented in the present collections. *Pholoë*, in the Pacific, is known only from records for Washington, northward. *Sigalion*, reported only as *S. pourtalesii* Treadwell, is not the same as *S. pourtalesii* Ehlers from the West Indies, but is herein referred to *Eusigalion spinosum*, new species (see page 60).

A key to the genera of SIGALIONIDAE included in this report follows:

1. Prostomial lobe trapezoidal, widest anteriorly, its median antenna small, inconspicuous, inserted on a short base without ctenidia; neuropodial setae bifid distally . . . EUSIGALION
1. Prostomial lobe subglobular, the anterior median area concealed by the base of a conspicuous median ceratophore, with a pair of lateral ctenidia 2
2. Third setigerous segment with a dorsal cirrus; elytra with lobular, papillated processes, and encrusted with sand particles PSAMMOLYCE
2. Third segment without dorsal cirrus; elytra without marginal lobes though often with marginal fringe 3

- | | |
|---|---------------|
| 3. Neuropodial setae distally entire | 4 |
| 3. Neuropodial setae distally bifid | STHENELAIS |
| 4. Neuropodial setae with smooth, blunt appendage, those in a fascicle similar to one another, forming trim vertical series | STHENELANELLA |
| 4. Some neuropodial setae long, pointed, the appendage transversely canaliculated | LEANIRA |

Genus **EUSIGALION** Augener

Prostomium subtrapezoidal, with 3 subequal antennae, including a pair inserted near the anterior margin, and a median antenna posterior to, or between, the eyes. Eyes 4, minute, disposed in a rectangle on the dorsal side of the prostomium. Parapodial structures and elytra resembling those in *Sigalion* Audouin and M. Edwards.

Eusigalion has heretofore been known through a single species, *E. vazensis* Augener (1918, p. 113) from the French Congo, Africa. Two species are herewith added.

Eusigalion spinosum, new species

Plate 11, Figs. 134-140; Plate 12, Figs. 146, 147

Sigalion pourtalesii Treadwell, 1914, p. 183 (not Ehlers, 1887, p. 57).

Collections.—198-37, 780-38, 814-38, 876-38, 887-38, 888-38, 889-38 (Holotype), 891-38, 893-38, 895-38, 896-38, 897-38, 899-38, Acc. 587, Acc. 590. About 45 specimens.

Length 100 mm or over; number of segments 125 to 150. Pale to white, the elytra translucent and more or less completely covering the dorsum. Form depressed, subrectangular in cross section, tapering anteriorly from about the tenth segment to a truncate prostomium, and posteriorly from the median region to a narrow posterior end.

Prostomium trapezoidal in outline, about as broad as long, widest at its anterior margin (pl. 11, fig. 135), with 4 small dark eye spots on the dorsum near the middle, and 3 subequal antennae, a pair at the anterior margin and a median posterior to the eye spots. Palpi long, slender, white, smooth, tapering and extending posteriorly to about the seventh setigerous segment, when laid back.

Elytra are pale or white, translucent, smooth, slightly emarginate at their anterior margin (pl. 11, fig. 134), and with a row of pinnately branched filaments (pl. 11, fig. 139) at their outer lateral margin.

Parapodia are long throughout, the notopodium at first shorter than the neuropodium (pl. 11, fig. 136) and gradually increasing in length so as to extend distally beyond the neuropodium (pl. 11, fig. 138). The notopodium is distally vesicular and terminates in a short cirrus, dorsal to the setal fascicle. Neuropodia are obliquely truncate, terminate dorsally in a triangular lobe in which the aciculum is embedded. Acicula are pale, not extending beyond the fleshy lobes. Ventral cirri are cirri-form, taper distally, and are directed ventromedially. They extend distally beyond the neuropodium to which they are attached. Anal cirri include a single long, slender filament about as long as the last 12 segments, and a shorter, similar filament only about half as long.

Notopodial setae are pale, long, slender, directed dorsally and curved somewhat over the dorsum. Under high magnification they show a finely serrated edge (pl. 12, fig. 147). The neuropodial setae include a supraacicular fascicle, emerging from the dorsal side of the neuropodium, and a heavier subacicular fascicle. The superior fascicle consists of about 9 finer, composite setae at the anterior side and 12 to 15 progressively coarser composite setae posteriorly. A few (about 4) have shorter, most of them have longer, appendages (pl. 12, fig. 146). In addition, there are about 7 shorter, simple, spinose setae (pl. 11, fig. 140) in the anterodorsal part of the fascicle. The subacicular fascicle includes a few (about 4) stouter, short-appendaged, composite setae, and a great many (40 to 50) much finer, longer, composite setae. These have a long, slender, articulated appendage with bifurcated tip (pl. 11, fig. 137). The shaft is spiny, hence the specific designation.

No tube or investing sheath has been found with, or on, any of the individuals. Indications are that it burrows through a soft substratum.

Eusigalion spinosum differs from *E. vazensis* Augener, the only known species in this genus, in its prostomial proportions (Augener, 1918, pl. 2, fig. 14), its much greater size, in having spinose setal shafts, and in its elytral details. It resembles *Sigalion ovigerum* Monro (1924, p. 47; 1930, p. 101) in having long, slender neuropodial setae, but in the latter the prostomium lacks a median prostomial antenna.

A single specimen from Ballast Point, San Diego, California, in the collections of the University of California, labelled *Sigalion pourtalesii* (Treadwell, 1914, p. 183) is a *Eusigalion*, identical with the species described above. The genus, *Sigalion* Audouin and M. Edwards, is therefore not known to be in California waters.

Holotype.—AHF no. 8.

Distribution.—Monterey Bay (Holotype), south to southern California; Farallon Islands, Anacapa Island, Santa Barbara Island, Catalina Island, California; Galapagos Islands; Chatham Bay, Cocos Island. In 10 to 65 fms. It is apparently rare or absent from Lower California, Mexico, and areas south, where its nearly related species, *E. hancocki* (see below), is found. The extra-California specimens are pygmies compared with those from Monterey Bay and south-central California.

***Eusigalion hancocki*, new species**

Plate 12, Figs. 141-145, 148-152

Collections.—66-33, 74-33, 126-33, 208-34, 701-37, 745-37, 747-37, 769-38 (Holotype). 10 specimens.

Length of 66 anterior segments about 40 mm; greatest width between segments 15 to 25. Surface smooth, glistening, the midventrum with a slightly thickened ridge in the region between the longitudinal muscle bands. Lower lip with about 12 longitudinal grooves.

Prostomium trapezoidal, slightly longer than wide, the anterior margin with a median convexity, the posterior margin nearly straight (pl. 12, fig. 144). Prostomial antennae small, papillar, the paired ones inserted at the anterior margin, the median between the anterior pair of eyes. In some individuals they are dusky at their tips. The 4 minute black eye spots are on the anterior half of the prostomium. They are deep seated and seen only when looking directly over the area where they are located. A supraoral, biarticulated antenna is inserted medially just over the mouth aperture. Palpi are white, long, slender, smooth, extending posteriorly to the seventh segment when directed backward.

Branchial cirri simple, cirriform, present from fifth setigerous segment, the first as large as those more posterior; they are curved outward and slightly directed toward the preceding parapodium (pl. 12, fig. 143). Dorsal cirri (pl. 12, fig. 145) are proportionately larger than those in *E. spinosum*. Ventral cirri are slender, tapering, extending distally beyond the parapodia in the anterior region but becoming gradually shorter to about the fortieth segment (pl. 12, fig. 145).

Elytra are white or slightly fulvous; they completely cover the dorsum and the bases of the parapodia. The first pair is oval, the others broad, their ectal margins with a delicate fringe of subpalmately branched papillae (pl. 12, fig. 141), otherwise the margin is entire.

Surface is smooth save for a few cirriform papillae along the outer, lateral portion near the marginal fringe (pl. 12, fig. 142).

The parapodial structures are not much different from those in *E. spinosum* (see above), except that the setae vary in details. The notopodial setae are delicately serrated; a few of the inferiormost are much smaller and quite smooth (pl. 12, fig. 148). The neuropodial setae include a few dorsal, simple, spinose setae (pl. 12, fig. 149) and numerous composite setae. These have a smooth (pl. 12, fig. 150) or spinose shaft (pl. 12, figs. 151, 152) and slender, bifurcated appendages, with or without articulations. The secondary tooth is, in most instances, long but does not project beyond the main fang (pl. 12, fig. 150).

Eusigalion hancocki differs from *E. spinosum* (page 60) in its prostomial proportions and in its setae, as described above.

Holotype.—AHF no. 9.

Distribution.—Off San Jose Light, Guatemala (Holotype); Gulf of California, Mexico; Isabel Island, Mexico; La Libertad, Ecuador; Albemarle Island, Galapagos. Sublittoral to 32 fms. Two specimens (74-33) from Albemarle Island were caught with the use of an electric light, at night.

Genus **STHENELAIS** Kinberg

Body elongate, tapering, consisting of numerous segments; elytra more or less completely covering the dorsum. Prostomium anteriorly rounded, usually with 4 eyes disposed in a rectangle, the anterior pair at the anterior margin of the prostomium, more or less concealed from the dorsum by the median ceratophore, the posterior pair usually on the dorsal side of the prostomium. Median antenna stout, its ceratophore with a pair of lateral, flaring ctenidia. Paired lateral antennae inserted on the first setigerous segment. Palpi long, often exceeding in length the first 10 or more segments. First segment elongate, directed anteriorly, provided with setal fascicles. Parapodia biramous, the notopodium with simple, pointed setae, transversely serrated along one or both edges, or almost smooth; neuropodium with only composite setae, or also with simple, spinose superior setae (pl. 13, fig. 153). A ciliated tentacular cirrus (=branchia) on all or most parapodial appendages, posterior to the first few segments. Area between the tentacular cirrus and the notopodium with a series of ciliated ctenidia.

***Sthenelais fusca* Johnson**

Plate 13, Figs. 153-162

Sthenelais fusca Johnson, 1897, pp. 185-186, pl. 9, figs. 60, 61, pl. 10, fig. 64; 1901, p. 397; Moore, 1909, p. 242; Treadwell, 1914, pp. 183-184; Monro, 1933, p. 16.

Collections.—28-33, 343-34, 745-37, ?770-38, 780-38, 907-38, Acc. 585. 11 specimens.

Notopodial setae are disposed in a full, fan-like fascicle of longer, finely serrated setae, and fewer, shorter, pectinated setae in the inferior part of the fascicle. Neuropodia have superiorly (1) spinose setae (pl. 13, fig. 153) and (2) long-shafted composite setae (pl. 13, fig. 154); medially (3) stout, falcigerous setae with short, bifid appendage (pl. 13, figs. 155 to 157), disposed in a semicircular whorl about the neuroaciculum, the arc open anteriorly (pl. 13, fig. 159); and inferiorly (4) slender, pale composite setae with long appendage in a transverse series of 6 to 10, ventral to the parapodial flange that borders the main setal fascicle. This character is in sharp contrast to the condition in *S. variabilis colorata* Monro (see page 63).

The first elytra are broadly ellipsoid, smaller than those following; the others are excavate at their anterior margin (pl. 13, figs. 160 to 162). There is a row of longer, filiform papillae marginally, and several irregular rows of smaller, submarginal papillae (pl. 13, fig. 161). In some individuals the surface of the elytra is closely covered with minute, wart-like elevations (28-33, Acc. 585), in others the papillated area is much less or almost lacking. Thus, in 343-34, an anterior portion is smooth; in 745-37 and 780-37 (pl. 13, fig. 160) the papillae are limited to an anterior area. Most of the elytral outlines examined are proportionately less broad for their length than has been shown by Johnson (1897, pl. 10, fig. 64). Specimens from Point Loma, near San Diego, California, (in the author's collection) have, however, the elytral proportions approximately as shown by Johnson (pl. 13, figs. 161, 162).

The arrangement of the papillar lobes on the parapodia is more or less constant in all individuals. The notopodium has two or a few larger, stouter lobes on the posterior side, near the point where the notaciculum emerges. On its anterior side there is a series of 8 to 12 delicate, filiform lobes, along the line where the dorsalmost notopodial setae emerge. The neuropodial lobes are shorter than those of the notopodium, and limited to the anterior side of the podia. The ventral cirrus has a

small lobe at its junction with the parapodium, and an elevated flange a short distance from its articulation with the ramus (pl. 13, fig. 158).

A single specimen from 770-37 differs from others in that its peristomial cirri are checkered. In other respects it resembles *S. fusca*.

The specimens identified as *S. fusca* Johnson vary considerably in certain respects. The length ranges from 40 mm (adult female from 28-33) to 110 mm (745-37). The degree of tuberculation on the elytra is variable, as mentioned above; the surface of the elytra is pale in some, and encrusted with rust-colored particles in others. All agree, however, in having similar parapodial parts as described above, and the first elytrum is ellipsoid.

The relation of *S. fusca* Johnson to *S. variabilis colorata* Monro is apparently close. It is only by resort to microscopic parts that notable differences are observable.

Distribution.—Washington, south to Panama; Galapagos Islands. Intertidal to 46 fms. In root masses of eel grass; under stones.

***Sthenelais verruculosa* Johnson**

Plate 14, Figs. 167-175

Sthenelais verruculosa Johnson, 1897, p. 187, pl. 9, fig. 62, pl. 10, fig. 65; Treadwell, 1914, p. 184; Berkeley, 1923, p. 216.

Collections.—287-34, 888-38, 893-38, 894-38, 897-38. About 27 specimens.

Length over 75 mm; width without 4.5 mm, with parapodia 8.5 mm; with setae 13 mm at fifteenth segment. No specimens are posteriorly complete. Dorsum completely covered by elytra. They are fringed on their outer margins; the surface is finely punctate, and marked with a broad greenish gray crescent on the median and posterior third of the scale, approximately marking the line where the preceding elytrum overlaps it. The ventrum of the body is finely and closely pustuled, the papillae similar to those that cover the surface of the elytra.

The prostomium somewhat resembles that in *S. fusca* (see above) except that the anterior pair of eyes is visible from the dorsum, and only partly concealed by the antennal flanges. The posterior eyes are inserted somewhat behind the lateral bases of the median antenna. The latter has broad, lateral expansions (pl. 14, fig. 170). Palpi are white, long, slender, extending distally to the tenth setigerous segment when directed posteriorly.

Parapodial ctenidia are present from the fourth parapodium and occur in threes, the dorsalmost the smallest (pl. 14, fig. 167). Elytral cirri (=branchiae) are long, cirriform, directed ventrally and recurved inward. They extend distally to about the middle of the parapodial base. The whorl about the neuroacicular lobe, from which the median neuropodial setae arise, is closely surrounded by a fringe of elongate papillae. The inferiormost setae are ventral to the papillar whorl (pl. 14, fig. 175). A row of slenderer papillae borders the upper lobe where the notopodial setae emerge from the notopodium. The ventral cirrus has a basal thickening (pl. 14, fig. 167).

The first elytrum is large, with an anterior prolongation that fits snugly about the sides of the prostomium. Others are deeply excavate at their anterior margins. On their proximal margins they are smooth, delicate; laterally there are long fringes, some of which extend over the sublateral margin (pl. 14, fig. 171). The exposed surface is more or less covered with microtubercles subequal in size (pl. 14, fig. 172).

Neuropodial setae include (1) spinose, simple, superiormost (pl. 14, fig. 174), accompanied by (2) a few long jointed, composite setae, (3) median and inferior, long jointed, slender, bifid composite setae (pl. 14, figs. 168, 169). There are no stout, falcigerous median setae such as characterize *S. fusca* Johnson (see above). Notopodial setae are closely serrated (pl. 14, fig. 173).

Distribution.—California; British Columbia; Carros Island, Mexico; San Miguel Island, California. Subintertidal to 30 fms.

Sthenelais variabilis Potts, var. *colorata* Monro

Plate 13, Figs. 163-166

Sthenelais variabilis Potts, 1910, p. 349.

Sthenelais variabilis, var. *colorata* Monro, 1924, pp. 52-53; 1933, pp. 14-16, fig. 7.

Collections.—116-33, 250-34, 450-35, 451-35, 470-35. 6 specimens.

These specimens differ from *S. fusca* Johnson (see above) most notably in their much smaller size. An egg-laden female (450-35) consisting of 42 anterior segments is only 25 mm long and 3.5 mm wide. The first elytrum is about as broad as long and suborbicular. The inferiormost neuropodial setae are inserted dorsal to the ventral parapodial fringe (pl. 13, fig. 166) and the notopodial fringe is terminal rather than oblique in its insertion. The posterior margin of the elytra is neatly

beaded, its lateral margin fringed (pl. 13, figs. 163, 164). The surface is papillated, with wart-like elevations, those on anterior elytra finer than those more posteriorly.

The neuropodium terminates in a small lobe (pl. 13, fig. 166) at the place where the aciculum emerges. The ventral cirrus has a dorsal flange at its proximal end. Neuropodial setae include (1) spinose, simple setae, and slender, long shafted composite setae in the superior-most part of the fascicle, the latter with a spinose shaft; (2) stouter composite setae with longer or shorter appendage, the secondary tooth closely appressed (pl. 13, fig. 165); and (3) slender, inferior composite setae.

Distribution.—Eastern Australia; Panama; Costa Rica; Mexico. Subintertidal to 25 fms.

Sthenelais maculata, new species

Plate 15, Figs. 176-187

Collection.—273-34, 364-35, 373-35, 379-35, 634-37, 639-37, 833-38 (Holotype). 10 specimens.

Length of 50 anterior segments (833-38) is 31 mm, width at fortieth segment across elytra is 3 mm, with setae 4 mm. Another smaller, but nearly complete, individual, lacking the prostomium, is 40 mm for 112 segments (634-37). Dorsum completely covered by elytra. The latter are pale or cream colored, each overlain with a black ring about the elytophorous region, and a triangular fulvous area median to the ring (pl. 15, figs. 178, 182, 183).

Prostomium trapezoidal, broader than long, widest in its anterior half, without a median sulcus; the anterior eyes are in front of, and at the sides of, the median ceratophore, the posterior pair slightly anterior to the middle of the prostomium. Median ceratophore is about as long as the prostomium, its lateral expansions broad and extending distally beyond the main stalk. The median antenna is about twice as long as its ceratophore. Palpi are white, tapering, and extend distally to the sixth parapodium.

The first parapodium is directed anteriorly, its notopodial setae overlapping medially in front of the prostomium. Branchiae are present from the fourth segment (=second elytophorous); they are cirriform, recurved, heavily ciliated on their ventral side. Parapodial ctenidia occur in threes, nearly filling the space between the branchial base and the notopodial base (pl. 15, fig. 180).

Elytra are broadly imbricated and laterally fimbriated, the fringes continued submarginally (pl. 15, fig. 181). The first are about as broad as long, suborbicular in outline save at their anterior margin where they are truncate. The next few pairs, to about the sixth pair, are as long as, or longer than, wide with anterior margin only slightly excavate (pl. 15, fig. 178). More posteriorly they are proportionately broader and more distinctly reniform (pl. 15, figs. 182, 183). The dorsal surface is covered with microtubercles which are largest on anteriormost elytra, but inconspicuous throughout.

Parapodia are fimbriated on their anterior sides, the notopodium with about 4 longer papillae at its terminal portion, the neuropodium with about 12 to 15 (pl. 15, fig. 180). The neuroacicular lobe is stout, convex, projecting distally beyond the ventral cirri and notopodial lobe in median parapodia (pl. 15, fig. 180). In anterior parapodia the neuropodia are less developed (pl. 15, fig. 179). Ventral cirri are simple, tapering, with a dorsal flange and a smaller elevation at the proximal, dorsal base. Notopodial setae are elongate, finely serrated. Superior neuropodial setae include simple spinose (pl. 15, fig. 185) and slender composite setae, the appendage with 1 (pl. 15, fig. 176) or 2 articles (pl. 15, fig. 177), the shaft smooth or somewhat spiny. Median neuropodial setae are falcate, the tip bifid, the shaft smooth (pl. 15, figs. 186, 187). Inferior neuropodial setae are long, slender, articulated (pl. 15, fig. 184).

Sthenelais maculata belongs in the group with *S. fusca*, in having simple, spinose neuropodial setae. It differs most conspicuously from others of this group in its neuropodial proportions and the kinds of setae.

Holotype.—AHF no. 10.

Distribution.—Independencia Bay, Peru (Holotype); Callao, Peru; Manta, Ecuador; Tenacatita Bay, Mexico; Gulf of California, Mexico. Shore to 75 fms.

Sthenelais hancocki, new species

Plate 16, Figs. 188-202

Collection.—890-38. 3 specimens.

There are 3 anterior fragments, the longest piece is 34 mm long for 64 segments. The width is 3 mm without, 4.5 mm with parapodia and

6.2 mm with setae. The body and elytra are pale except for black eyes and a few diffuse sooty patches on some of the anterior elytra. Some of the posterior elytra are encrusted with rust-colored granulation.

Prostomium trapezoidal, widest anteriorly, the width slightly exceeding the length; with a pale median longitudinal line but without a median sulcus. Eyes 4, black, the anterior pair at the anteroventral margin, concealed from dorsal view by the antennal ctenidia, and a posterior pair at the sides of, and slightly posterior to, the antennal base (pl. 16, fig. 188). Median antenna similar to the peristomial cirri, but about one third again as long. Palpi are white, tapering, extending distally beyond the prostomial antenna.

Elytra completely cover dorsum; they are broadly overlapping posteriorly and medially. The surface appears smooth to the unaided eye, but under magnification shows numerous low, yellowish, chitinous, simple spines. The margin is entire except for a limited outer border which has a simple fringe (pl. 16, figs. 189, 191, 198, 202). The first elytrum is suboval (pl. 16, fig. 191), narrower than that following, but broadly overlapping the second one. The latter is deeply excavate at the anterior border, the point of attachment proportionately far posterior (pl. 16, fig. 189). Other elytra are increasingly larger toward the median region of the body, the inner half of each scale forming a large lobe at its anterior margin, the outer half less so. In anterior elytra the surface is almost entirely overlain with simple, low spines; in the median and posterior regions the spines are more or less obscured by a rust-colored incrustation. In anterior elytra the prickly area extends over the entire portion, in posterior scales the outer half is nearly or quite smooth (pl. 16, fig. 202). Also, the outer fringe, at first more or less regular, is less so in median and posterior elytra, and the spaces between the longer fringe often filled in with minute, globular papillae (pl. 16, fig. 198). The chitinous spines are low (pl. 16, fig. 195) and when seen in dorsal view appear three-angled (pl. 16, fig. 194).

Parapodia are typical of the genus, the first 3 pairs directed forward at the sides of the prostomial and oral areas, the others laterally. In the first few parapodia, from the second, the neuropodium extends distally beyond the notopodium, but by the tenth segment they extend distally about equally far, and more posteriorly the notopodium is the longer. The first parapodium is uniacicular (pl. 16, fig. 190), with a long dorsal cirrus, a ventral cirrus about half as long, and a shorter, clavate cirrus, dorsoanterior to the dorsal cirrus that represents the

transposed prostomial antenna. Its setae are numerous, long, capillary, finely serrated.

In the second to fourth segments, the neuropodium has a few anterodorsal, composite setae, their appendages long, 1 or 2 articulated, and distally bifid, the shaft is long, strongly spinose (pl. 16, fig. 192). The median and inferior neuropodial setae are less spinose or quite smooth. From the fifth segment the spinose composite setae are replaced by simple, spinose setae (pl. 16, fig. 193), and the median (pl. 16, fig. 197) and inferior setae (pl. 16, fig. 196) are all smooth shafted, the former heavier than the latter. The appendages are 1 to 6 articulated, and the tips are finely bifid (pl. 16, figs. 199, 200). From about the thirty-second segment, one or a few of the median composite neuropodial setae are stout, the appendage short, falcate, strongly bifid (pl. 16, fig. 201). Setae and acicula are pale yellow.

A few terminal parapodial fringes are present on the anteriormost segments, but inconspicuous or absent on others, save for a few at the anterior margin at the distal end of the notopodium. The ventral cirrus of the first segment is longer than those following. It extends distally beyond the parapodium. By the fourth segment it is shorter than its respective parapodium, and remains more or less the same more posteriorly.

Sthenelais hancocki approaches *S. neoleanirae* (see below) in having mostly fine neuropodial setae, with a strongly tapering appendage and minute, bifid tip. It differs, however, in almost lacking the parapodial fimbriation which is notable in *S. neoleanirae*. Also, the neuropodial setae, though tapering strongly distally, terminate in a more distinct bifid tip. The elytral spines are proportionately much smaller and lower.

Holotype.—AHF no. 11.

Distribution.—Monterey Bay, off Point Piños, California. In 36 fms.

Sthenelais neoleanirae, new species

Plate 17, Figs. 203-216

Collection.—667-37. One specimen.

This is known only through a single, incomplete anterior fragment, including the prostomium and about 73 segments with 57 pairs of elytra.

The prostomium is wider than long, with 2 pairs of black eye spots, the anterior pair at the frontal margin of the prostomium, concealed by the prostomial antenna. They are larger than the posterior eyes, and spaced a little nearer together. The posterior eyes are immediately below the lateral base of the median ceratophore.

Branchial cirri are minute, papilliform, on the first elytophore (segment 4), but more or less subequal more posteriorly. The elytra are imbricated, completely covering the dorsum. They are fimbriated along their outer, lateral margin, and some fringes continued submarginally (pl. 17, fig. 209), the anterior margin slightly excavate. Many of the posterior elytra have 3 to 5 larger, simple spines (pl. 17, fig. 210) in a row near the posterior border, in addition to many smaller, similar spines. All of the spines are higher than broad at their base (pl. 17, fig. 208).

Parapodia, from the second, are conspicuously fimbriated in the first 10 or more segments. The fimbriae are long, papillar, bordering the setal and acicular fascicles (pl. 17, figs. 203, 206). They are present more posteriorly, but in diminishing numbers and sizes.

The first parapodium has a long slender dorsal cirrus, more than twice as long as its ventral cirrus. A shorter, clavate cirrus, dorsal and anterior to the dorsal cirrus, represents the transposed prostomial antenna (pl. 17, fig. 207). The setae are all of one kind, long, slender, capillary, minutely serrated, the supraacicular about twice as long and numerous as the subacicular setae.

The second parapodium has 2 or 3 superior composite setae with a long, spinose shaft, and a 5 or 6 articulated appendage, the tip obscurely bifid. The other setae resemble those in more posterior parapodia. From segment four, there are simple, spinose setae (pl. 17, fig. 211) in the anterodorsal position of the neuropodial fascicle accompanied by slender composite setae (pl. 17, fig. 204). The median (pl. 17, figs. 212, 213) and inferior setae (pl. 17, figs. 205, 215) have a heavy shaft, with few, or mostly no, serrations, and a rapidly tapering appendage which is 1 to 5 articulated, and terminates in a poorly marked bifid tip (pl. 17, figs. 212, 213).

The notopodia, from the second, are at first notably smaller than the neuropodia (pl. 17, fig. 206), but from the tenth segment the notopodium becomes increasingly larger and surpasses the neuropodium (pl. 17, fig. 216). Ventral cirri are tapering, with a terminal lobe (pl. 17, fig. 206).

The unique character of the neuropodial setae and the spiny elytra distinguish this species from others of the genus *Sthenelais*. It is designated *S. neoleanirae* because its composite neuropodial setae taper rapidly to a slender tip, which is, however, bifid.

Holotype.—AHF no. 12.

Distribution.—Escondido Bay, Carmen Island, Gulf of California, Mexico. In 60 fms.

Genus *STHENELANELLA* Moore

Prostomium subglobular, resembling that in *Sthenelais* Kinberg, with a stout median antenna at the base of which are flaring ctenidia; eyes 4, black, disposed at the anterior face of the prostomium, and near the dorsal bases of the median ceratophore. Paired prostomial antennae inserted on the peristomial segment, as in *Sthenelais*. Elytra inserted as in *Sthenelais*. Notopodial setae numerous, long, slender, hair-like, with fine transverse serrations. Neuropodial setae of one kind, composite, with a smooth, or only slightly spinose, shaft and a smooth, slightly falcate appendage; the dorsalmost neuropodial setae have a proportionately longer, slenderer appendage than those more ventral. Only a single species, *S. uniformis* Moore (1910, p. 391), is known.

Sthenelanella uniformis Moore

Plate 18, Figs. 226-231

Sthenelanella uniformis Moore, 1910, pp. 391-395, pl. 33, figs. 105-112;
Treadwell, 1914, p. 184.

Collections.—213-34, 259-34, 876-38, 878-38, 895-38, 900-38. About 12 specimens.

The first elytra are orbicular, with a short, close marginal fringe along the anterior edge (pl. 18, figs. 226, 227). More posterior elytra are subrectangular to rhomboidal (pl. 18, fig. 228) with entire margin. The first 8 to 10 pairs have irregular patches of rust-colored pigment, most conspicuous on their proximal halves (pl. 18, fig. 228). Parapodia are short, blunt, the neuropodial setae in trim, perpendicular fascicles, all of them resembling one another (pl. 18, figs. 229 to 231) except in a few of the anteriormost parapodia, but differing slightly in proportions; the appendages of the superiormost are longest (pl. 18, fig. 231).

From the sixteenth segment, a long trailing fibrillar strand emerges

from the notopodium at the aciculum, and projects laterally in long streaming filaments, far beyond the parapodia. They recall the spinning glands of some of the Polyodontidae, and perhaps function in a similar manner.

The original description was based on an incomplete male specimen, taken with "yellow Doris," and was therefore thought to be commensal (Moore, 1910, p. 395). The collections at hand, however, include some in tubes, much like those constructed by *Panthalis pacifica* Treadwell. An individual 26 mm long occupied a tube 65 mm long, by 4-8 mm wide, the walls soft, thick, felted, the lining smooth though not firm, the outer layers containing sand particles.

Distribution.—California; Anacapa Island and Santa Barbara Island, California; Catalina Island; Tangola-Tangola, Mexico; La Plata Island, Ecuador. Moore's unique type came from an unknown locality. Treadwell reported it from San Pedro, California, in 19-38 fms. The available collections extend the known range far to the south (Ecuador). Subintertidal to 40 fms.

Genus **LEANIRA** Kinberg

Prostomium resembles that in *Sthenelais* (see above), with a stout median antenna inserted on a basal ceratophore with flaring ctenidia. Elytra more or less completely covering the dorsum, with or without marginal fringe. Notopodial setae slender, serrulate, distally pointed. Some neuropodial setae are composite, the appendage tapering to a fine, entire point, with or without transverse canaliculations. Differs from *Sthenelais* Kinberg in having pointed composite setae instead of bifid setae.

Leanira fimbriarum, new species

Plate 18, Figs. 217-225

Collections.—216-34, 436-35, 640-37, 667-37 (Holotype), 880-38. About 11 specimens.

Length of 33 anterior segments (667-37) is 24 mm; another larger individual, from 880-38, is 30 mm for 42 segments. General appearance pale, smooth; the elytra leave uncovered a narrow stripe from about the seventh to twentieth segment, and most of the parapodia.

Prostomium pale, broadly oval, with 4 eyes on the anterior half, the anterior pair at the frontal margin, concealed from the dorsum by the broadly expanded antennal ctenidia, the posterior pair smaller, near the dorsal antennal base (pl. 18, fig. 218). Elytra translucent, smooth save for numerous minute punctations, distinguishable only under high magnification. The first pair is subrectangular, with fringe along the exposed margin (pl. 18, fig. 219), the hilum excentric; others are excavate at their anterior margins, the fringe limited to an outer, ectal portion, and consisting of widely spaced, simple filaments (pl. 18, fig. 224).

Branchial cirri are present from the seventh segment, first as minute papillae on the elytophore, becoming gradually longer, and, from about the eighteenth segment where best developed, they do not extend distally to the notoacicular lobe. Parapodia have 3 widely separated ctenidia, the middle one the largest.

The first parapodium is uniacicular, has a long, tapering dorsal cirrus that extends distally beyond the setae, a ventral cirrus less than half as long, and a smaller, clavate cirrus (transposed prostomial antenna) about two thirds as long as the ventral cirrus inserted anterodorsally to the dorsal cirrus. The proportions and parts are much as those described in the species of *Sthenelais* (see above). Its setae are all of one kind, numerous, long, capillary with fine serrations, the subacicular only about half as long as the supraacicular.

From the second, the parapodia are biacicular, each ramus terminating in numerous digitate lobes (pl. 18, fig. 225). In the second parapodium the notopodium is reduced in size, far surpassed by the neuropodium. Its ventral cirrus is long, slender, extending distally beyond the neuropodium, and nearly as long as the dorsal cirrus of the first segment. The neuropodial setae include (1) one or two superior composite setae, with long spinose shaft, a tapering appendage about as long as the spinose region of the shaft, and (2) numerous larger composite setae with smooth or only slightly spinose shaft and long, tapering, pointed appendage, with no trace of articles or canaliculae.

From the fourth segment, the superiormost neuropodial setae are simple, spinose (pl. 18, fig. 221); the median and inferior setae are all composite and resemble one another except for greater thickness in the median portion of the fascicle. The appendage is long, tapering to a fine point, clear, without canaliculae (pl. 18, fig. 222). The shaft is smooth or only slightly spinose (pl. 18, fig. 222). An inferiormost fascicle of smaller, similar setae emerges ventral to the parapodial

fringe. Setae and acicula are pale yellow. Notopodial setae are of two kinds, (1) numerous, fine, bipectinate setae in the upper and median parts of the fascicle (pl. 18, fig. 220), and (2) inferior, simple capillary setae (pl. 18, fig. 223), as also intergradations of these two kinds.

Parapodia have numerous fimbriae, bordering the setal fascicles on the anterior and dorsal faces of the podal rami. These are most conspicuous on the first 15 segments. More posteriorly they diminish in size and number and by the twenty-fifth parapodium are much reduced. A few, however, at the anterodorsal edge of the notopodium and the dorsal edge of the neuropodium are present throughout (pl. 18, fig. 217). A conspicuous feature is the presence of 2 lobes at the ectal margin of the notopodium.

Leanira fimbriarum differs from typical representatives of this genus in that its inferior neuropodial setae are not canaliculate. The prostomium has well-marked eyes, and the elytra are fimbriated.

Holotype.—AHF no. 13.

Distribution.—Escondido Bay, Gulf of California, Mexico (Holotype); Piñas Bay, Panama; Cape of San Francisco, Ecuador; Santa Rosa Island, California. Shore to 60 fms.

Genus PSAMMOLYCE Kinberg

Body elongate, consisting of numerous segments. Prostomium sub-circular or oval, widest posteriorly; without eyes or with 4 eyes on the anterior half. A median antenna inserted on a stout ceratophore without ctenidia. The paired prostomial antennae inserted on the peristomial segment. Parapodia subbiramous, the notopodium short, with only fine, hair-like, serrated setae; the neuropodium stout, with composite setae, the shaft smooth or spinose, the appendage usually falcate distally, the tip entire or bifid. Elytra encrusted with sand particles, the margin fimbriated, and produced in lobes at the median, and sometimes also posterior, margins.

Psammolyce spinosa, new species

Plate 19, Figs. 232-243

Collections.—140-34, 780-38 (Holotype).

Length of 73 anterior segments is 55 mm; a posterior end is lacking. Width across elytra is 5 mm, including setae 7 mm. The dorsum is encrusted with sand particles, over the proximal portions of the elytra

and the broadly exposed dorsum. The ventrum is marked with a deep, median neural groove, and is almost uniformly covered with filiform papillae, producing a furry appearance. The papillae are continued laterally over the surface of the parapodia, but are for the most part shorter and smaller.

The prostomium is largely concealed by the stout median ceratophore and the peristomial segment. It is narrowest anteriorly (pl. 19, fig. 238). The 4 eyes are black, the anterior pair large, approximately circular, directed anteroventrally, their edge visible in dorsal view of the prostomium. Posterior eyes are much smaller, nearly circular, inserted on the prostomial lobe in line with, but away from, the lateral bases of the median antenna. Median antennal base is large, bulbous, projecting anteroventrally, provided with a slender, tapering antenna that extends distally about as far as the setae of the first segment (pl. 19, fig. 238).

Elytra are imbricated, but do not nearly overlap medially, and leave uncovered the parapodia. They are broad, somewhat triangular anteriorly (pl. 19, fig. 243) and gradually become subquadrate posteriorly (pl. 19, fig. 240). None are incised. The marginal fringe is close, long, where present, but absent along the anterior margin where the elytrum is overlapped by the preceding one. It extends distally not nearly as far as the notopodial setae. In addition, there are knob-like lobes at the inner and posterior margins, from which small capitate papillae arise (pl. 19, fig. 243). The dorsal surface of the elytra is overlain with many long papillae, similar to those at the margin, but mostly shorter.

Parapodia are subbiramous, the notopodium short, blunt, rising from the dorsal face of the neuropodium (pl. 19, fig. 239) and provided with a large, spreading fascicle of many (200 or more) very fine, hair-like, serrated setae that extend upward, laterally and ventrally, more or less concealing the other parapodial structures. The notopodium projects slightly from its lobe, but is not visible unless the notopodial setae are lifted away.

The neuropodium is a stout lobe, covered over with elongate papillae, from which the stout aciculum projects a short distance. It is provided with stout, amber-colored, composite setae. The superiormost setae have a long, spinose shaft (pl. 19, figs. 234, 235) (for which the species is named), and long falcate appendage, usually without, but sometimes with, a small accessory tooth. Median neuropodial setae are about as heavy as, or heavier than, the dorsalmost. The shaft is nearly

smooth (pl. 19, figs. 236, 237, 241), the appendage shorter, falcate, and the tip entire or bifid. Inferior neuropodial setae are much finer, paler yellow, with much longer appendage and tip entire or nearly so (pl. 19, figs. 232, 233). The neuropodial setae in the first few segments include some with a serrulated shaft and long, bifid appendage (pl. 19, fig. 242). Ventral cirri are long, tapering, extending distally about as far as the neuroacicular lobe (pl. 19, fig. 239).

Psammolyce spinosa approaches *P. farquharensis* Potts (1910, p. 347) from the Indian Ocean, in that the elytra are not incised, their margins fimbriated and provided with lobes. It differs from the latter, however, in that the superiormost neuropodial setae have a distinctly spinose shaft, and the median composite setae are somewhat spinose. In so far as I am aware, no species of the genus *Psammolyce* Kinberg has been described from the eastern Pacific. It is therefore of great interest that these collections should include 4 species, all of which appear to be new to science (see below).

Holotype.—AHF no. 14.

Distribution.—Chatham Bay, Cocos Island (Holotype); Clarion Isle, Mexico. In coral; in white sand, 40 to 46 fms.

***Psammolyce fimbriata*, new species**

Plate 20, Figs. 244-254

Collections.—250-34, 283-34, 745-37 (Holotype). 3 specimens.

Length of 88 anterior setigerous segments is 43 mm. The dorsum is broadly exposed between the inner margins of the elytra, but heavily covered with sand particles, as also most of the surface of the elytra. The ventrum is pilose, overlain with many short hairs, the region immediately posterior to the mouth, on the ventral side, with numerous long hairs, forming a V-shaped area that extends posteriorly at least to the fourteenth segment. From the twentieth or twenty-fifth segment there are longer, filiform papillae, in more or less regular, transverse series inserted in the intersegmental furrows; these become increasingly numerous more posteriorly, appearing fur-like.

The prostomium is ovoid, narrowest anteriorly, largely concealed by the median ceratophore and peristomial structures. Eyes 4 pairs, a larger ventral pair at the frontal margin and a smaller, elongate, pos-

terior pair near the base of the ceratophore (pl. 20, fig. 245). The median antenna is conspicuous, its ceratophore curved downward, the style long, slender (pl. 20, fig. 244).

The everted proboscis (745-37) terminates in 11 dorsal and 11 ventral, soft papillae. Jaws are amber colored, with 2 large dorsal and 2 ventral fangs, but without lateral accessory teeth.

The elytra are visible only after removing the sandy covering. They have long, club-shaped processes along their inner and posterior margins (pl. 20, fig. 252), which project slightly above the sand particles. The surface extends laterally to conceal the parapodia and most of the setae (thus contrasting with the condition in *P. spinosa*). The long, lateral fringe extends laterally nearly as far as the neuropodial setae. The dorsal surface is overlain with papillae to which foreign particles adhere. The elytraphoral scar is elongate, near the inner side, and there is no incision (pl. 20, fig. 252).

Parapodia are much as in *P. spinosa*, the notopodium is short, papillar, with numerous fine, hair-like, serrated notopodial setae (pl. 20, fig. 248). These fascicles are notably smaller and less conspicuous (pl. 20, fig. 251) than in *P. spinosa*. The neuropodia are proportionately shorter, and less papillated except on the ventral surface where the papillae are long, filiform. Neuropodia include stouter, superior (pl. 20, fig. 254) and median setae (pl. 20, fig. 253), and finer, slenderer inferior setae (pl. 20, fig. 247). The superior setae have a somewhat spinose shaft and an appendage that is slightly falcate, its length less than three times its greatest width (pl. 20, fig. 254). The median setae are similar to the superior, but the shaft is almost smooth and the appendage is about as broad as long or only slightly longer (pl. 20, fig. 253). The inferior setae have a long, slender appendage with entire (pl. 20, fig. 247) or bifid tip. The first few parapodia (posterior to the first) have composite neuropodial setae in which the shaft is strongly serrated, the appendage long, slender, with entire tip (pl. 20, figs. 246, 250), or bifid tip (pl. 20, fig. 249).

P. fimbriata differs from *P. spinosa* in that the parapodia are proportionately shorter, the shafts of the superior neuropodial setae are almost smooth, the prostomial structures differ (see figures above).

Holotype.—AHF no. 15.

Distribution.—Isabel Island, Sinaloa, Mexico (Holotype); Thurloe Bay, Gulf of California; Secas Islands, Panama. In 8 to 25 fms.

Psammolyce myops, new species

Plate 21, Figs. 255-264

Collection.—639-37. One specimen.

Length about 45 mm; number of segments 110 or over. A single specimen in 2 pieces, includes anterior and posterior ends but is somewhat macerated; the last few segments are short, crowded, and terminate in a pair of cirriform anal cirri that are about 3 times as long as the anal ring is wide. Surface is pale, encrusted with white sand and shell particles. Dorsum broadly exposed by the elytra but covered over with sand particles, as are also the median halves of the elytra.

Prostomium with median, club-shaped, humped, ceratophore (pl. 21, fig. 261) and slender style. Eyes 4, the larger, ventral pair elongate, rectangular, in an anterior-posterior direction. Dorsal eyes much smaller, elongate, on the side of the base of the median ceratophore (pl. 21, fig. 260).

Elytra much as in *P. fimbriata* (see above), the lobes ornamented with numerous soft papillae, the margins and surface with elongate fringes (pl. 21, fig. 255).

Parapodia with short, papillar notopodia, and robust, truncate neuropodia, the neuroacicular lobe only slightly (pl. 21, fig. 259) or not at all projecting beyond the main body of the lobe except in a few anterior parapodia (pl. 21, fig. 259). Notopodial setae are fine, numerous, and extend distally almost as far as the neuropodial setae. The neuropodia have stouter superior and median setae, and finer, slenderer, inferior setae. The superiormost setae are mostly entire distally but a few are bifid; the median setae have a shorter, stouter appendage than the dorsalmost, and the tip is entire (pl. 21, fig. 262) or bifid (pl. 21, fig. 263). The inferior setae are slenderer and the appendage longer (pl. 21, fig. 264). The first few segments, posterior to the first, include neuropodial setae with entire (pl. 21, fig. 258) or bifid (pl. 21, fig. 257) tips, and the shaft is more or less strongly serrated.

This unique specimen resembles *P. fimbriata* (see above) but differs in that (1) the neuropodia are more distinctly truncate, (2) the anterior eyes are narrow, elongate in a dorsoventral direction, the posterior eyes are smaller patches on the antennal base (pl. 21, fig. 261), (3) the composite neuropodial setae have shafts which are smooth save in the first few segments. The appendages are proportionately shorter and stouter than are those in *P. fimbriata*.

Holotype.—AHF no. 16.

Distribution.—Espiritu Santo Island, Gulf of California. 3-5 fms.

***Psammolyce antipoda* (Schmarda) *anoculata*, new subspecies**

Plate 22, Figs. 268-272

Pelogenia antipoda Schmarda, 1861, p. 160.*Psammolyce antipoda* Augener, 1913, pp. 96-97; Fauvel, 1917, pp. 186-189, fig. 10, pl. 4, figs. 12, 13; Monro, 1924, p. 47; Augener, 1927, p. 340.*Collection*.—465-35. One specimen.

Length of about 200 segments is 90 mm; nearly complete, a small posterior portion missing. Body dark purplish brown. The dorsum is almost solidly covered with sand particles, the ventrum is pilose, covered with filiform papillae that are longest at the sides around the parapodial bases.

The prostomium is pale, more or less translucent, to be seen only by lifting away the first elytra and the peristomial ring. Its dorsal margin, at the base of the stout ceratophore, is fused to the peristomial ring (pl. 22, fig. 268), and its lateral and ventral parts are somewhat telescoped in the first segment. No eye spots can be distinguished on any part of the prostomium or ceratophore.

The elytra are triangular (pl. 22, fig. 270) to subquadrate (pl. 22, fig. 269), heavily fimbriated at their exposed parts, and with a single, elongate lobe on the inner ectal margin. The dorsal surface is papillated.

The notopodial fascicle is full, thick, much as in *P. spinosa*, the numerous fine, hair-like setae project laterally far beyond the neuropodial setae. The neuropodium is distally truncate, slightly oblique. The superior and median neuropodial setae are much heavier than the inferior setae. Their shafts have several transverse rows of weak serrations or are quite smooth, the appendages are falcate, distally entire (pl. 22, fig. 272) or bifid. Inferiormost setae have a much longer appendage. Setae of the second segment include some with a spinose shaft, and a long appendage with (pl. 22, fig. 271) or without bifid tip.

In its parapodial and elytral structures, this specimen agrees with the accounts of *P. antipoda* (Schmarda). It differs, however, in that its prostomium is without eyes.

Holotype.—AHF no. 17.*Distribution*.—Playa Blanca, Costa Rica. Shore.

Family **Pareulepidae**, new name

PAREULEPIDAE is proposed to replace the family name, EULEPETHIDAE Chamberlin, because the type genus of the family must be changed to *Parculepis* Darboux (see below, under generic description). Only a single genus, *Pareulepis*, is known.

Genus **PAREULEPIS** Darboux

Eulepis Grube, 1875, p. 71 (not Dalman or Fitzenger. See Chamberlin, 1919, p. 89).

Pareulepis Darboux, 1899, p. 116.

Eulepethus Chamberlin, 1919a, p. 89.

Body short, depressed, consisting of few segments (about 36 to 40). Prostomium with 3 antennae and a pair of palpi. Elytra present to segment 23, disposed as in the SIGALIONIDAE on anterior segments; posterior segments with modified cirri, present on all segments. Setae simple, the notopodia with some slender capillaries, and some stout, curved setae, their distal ends bent sharply at an angle to the main stem (pl. 23, fig. 283). Neuropodial setae include a few smaller, superior pectinated setae (pl. 23, fig. 288) and a deep fascicle of nearly straight setae. Neuropodial acicula have a flattened chitinous piece at their distal ends, embedded in the fleshy part of the lobe (pl. 23, fig. 280).

Eulepis Grube was erected for the species, *E. hamifera* (1878b, p. 71) from the Philippines. *Eulepis*, however, has been shown to be preoccupied by Dalman and Fitzenger (see Chamberlin, 1919a, p. 89). *Pareulepis* Darboux (1899, p. 116) was erected for *Eulepis wyvillei* McIntosh (1885, p. 131), and separated from *Eulepis* Grube on the assumption that *E. wyvillei* lacked a segment between the first and second elytral-bearing segments, that is, that elytra are inserted on segments 2, 3, 4 . . . There is a tendency for segments 3 and 4 to be more or less fused dorsally (Fauvel, 1919, p. 337) which explains why segments 3 and 4 might have been confounded in the description of *E. wyvillei* McIntosh (1885, p. 131). "McIntosh hat sich offenbar geirrt, was aus den schwierig zu untersuchenden Verhältnissen der vordersten Segmente erklärbar ist" (Augener, 1918, p. 156). *Eulepethus* Chamberlin was not proposed until much later (1919a, p. 89).

Eulepis wyvillei McIntosh, from Bermuda, and *E. splendida* Treadwell (1902, p. 189) from Puerto Rico, have been considered identical

(Augener, 1918, p. 155). This conclusion appears justifiable in view of the similarities in the descriptions of the 2 species, even though *E. wyvillei* was said to have about 15 pairs of elytra and *E. splendida* 12 pairs. According to McIntosh's figure of *E. wyvillei* (1885, pl. 20, fig. 2) there were 13 pairs of elytra.

***Pareulepis fimbriata* (Treadwell), new combination**

Plate 23, Figs. 280-288

Eulepis fimbriata Treadwell, 1902, pp. 190-191, figs. 23, 24; Augener, 1918, pp. 153-155, pl. 3, figs. 39-41, fig. 10.

Eulepis geayi Fauvel, 1918, pp. 503-504, fig. 1; 1919, pp. 335-339, pl. 15, figs. 17-21, pl. 17, figs. 76-79; Pruvot, 1930, pp. 17-19, pl. 2, figs. 51-61; Day, 1934, p. 25.

Collections.—216-34, 770-38, Mission Bay, southern California (author's collection).

Number of setigerous segments to 39; length to 40 mm. Elytra 12 pairs, covering the dorsum medially, but leaving the last 7 or 8 segments uncovered. The elytra are white, smooth or slightly wrinkled. In a specimen from Ecuador the first elytrium is suborbicular, with entire margin; in one from Guatemala the anterior margin has 3 to 5 marginal papillae. The second elytrium is reniform in outline, the outer half longer than the inner and with about 5 marginal papillae. Variation in the margins of elytra is observable in comparing specimens from different areas. An eighth elytrium from individuals from Ecuador, Guatemala, and California is indicated in plate 23, figures 287, 281, and 288, respectively. The last, or twelfth pair, is elongate, with a limited marginal fringe (pl. 23, fig. 285).

Dorsal cirri on setigerous segments 3 to 6 are small, conical enlargements just posterior to the dorsal edge of the notopodial fascicle. Ventral cirri of the first setigerous segment are larger than others. They are clavate with an attenuate tip, and extend distally to the end of the parapodia on which they are attached. More posteriorly they are much smaller, though similar in form to the first (pl. 23, figs. 280, 282).

Setal structures are about as shown by Fauvel for *E. geayi* (1919, pl. 17), but the pectinate setae have a longer smooth tip (pl. 23, fig. 288). Many of the coarse notopodial setae have a slender, attenuate tip (pl. 23, fig. 283). Some of the notoacacula are recurved (pl. 23, fig. 284).

The anal cirrus is a very long, slender filament on a short basal stalk, its total length exceeding that of the length of the body. The basal stalk is inserted on the right side, but the cirrus is directed medially. The homologous basal structure on the left side is a small globular stalk without a filament.

The variations observable in the descriptions, as *E. geayi* Fauvel, of specimens from widely scattered areas (West Africa by Augener, Madagascar by Fauvel, New Caledonia by Pruvot) are of approximate magnitudes as are those to be seen in the collections from the western coasts of the Americas. The description of *E. geayi* agrees reasonably well with that of *E. fimbriata* (Augener, 1918, p. 153) and with the collections available for study. The name, *E. fimbriata*, has priority.

This is the first record of this genus from the eastern Pacific and, so far as I am aware, from the northern Pacific. The author has collected several specimens from low littoral areas near the mouth of Mission Bay, southern California, in a substratum of muddy sand. The burrows were 10 inches or more below the surface. No tube was present, and no commensalism or association with other organisms could be detected. The sand flat harbors an *Arenicola*, and a species of *Poecilochaetus*, representative of another family which has not heretofore been recorded from the northeast Pacific.

In life uniform white, glistening, smooth, contrasting with the dark muddy sand it inhabits.

Distribution.—West Indies; Madagascar; New Caledonia; Ecuador; Guatemala; Mission Bay, southern California. Intertidal to 20 fms.

Family Polyodontidae

Only 2 genera, *Polyodontes* Renier (= *Acoëtes* Audouin and M. Edwards) and *Panthalis* Kinberg, are represented in the collections of the Hancock Expeditions. These two genera are so nearly related that it has sometimes been doubtful whether a species should be relegated to one or the other of them. Thus, for example, *Panthalis melanonotus* Grube has been regarded as a *Panthalis* (Fauvel, 1919, p. 339) and later transferred to *Polyodontes* (Monro, 1931, p. 8; Fauvel, 1932, p. 37). *P. melanonotus* is provided with penicillate setae (as in *Panthalis*) and some of its parapodia are provided, though sparsely, with branchial lobes (as in *Polyodontes*).

More complete studies of the species in these genera, based on entire individuals, will perhaps disclose more obvious differences than have been found thus far. The differences as now set forth do not clearly warrant the retention of both generic names, though the separation is a convenient one. Unfortunately, many of the species are known only incompletely, often because of fragmentary materials. Many of the descriptions are based on anterior ends. Hence, the portion which might have had branchiae could not have been examined. Moreover, the presence or absence of branchial lobes, which has been used as a diagnostic character in separating these two genera, is sometimes subject to accidents and changes due to fixing and preservation. Because of these difficulties, the presence or absence of branchial structures has herein been ignored in separating the 2 genera, and the presence or absence of true penicillate setae is used.

The only setae that have been found to differ sufficiently to make them of diagnostic value are the superior neuropodial setae, in the segments posterior to the first 2 to 5 segments. These setae are either penicillate (with a bushy top), or elongate hastate, with smooth tip and sides, or somewhat hirsute. The penicillate setae sometimes have the tuft of hairs continued more or less down one side, their tips drawn out in a point (*P. melanonotus* Grube). The hastate setae may have the hirsute condition continued to the tip (as in *P. panamensis* Chamberlin). A transition from the penicillate seta to the hastate seta is thus demonstrable. Most of the species that have been described thus far, however, are not intermediate in this respect, but have setae either of the penicillate type or the hastate type. Though artificial, this means of separation is convenient for most species concerned.

The following definitions and classification for these 2 genera are therefore proposed.

Key to the Genera, *Polyodontes* Renier and *Panthalis* Kinberg

Superior neuropodial setae are elongate hastate, the tip smooth or more or less hirsute	POLYODONTES
Superior neuropodial setae are penicillate	PANTHALIS

Genus **POLYODONTES** Renier, char. emend.

Prostomium with 3 antennae, a pair of anteriorly directed ommatophores each bearing a conspicuous lenticular eye, and usually a pair of sessile eyes on the prostomium proper. Neuropodia provided with (1)

superior, straight, elongate, hastate setae, more or less hirsute (designated pseudo-penicillatae by Horst, 1917, p. 133) but no penicillate setae such as are present in *Panthalis* (see below), (2) median, stout, acicular spine-like setae with (pl. 24, fig. 292) or without a distal arista, and (3) inferior, curved, sickle-like, serrulate setae (pl. 24, fig. 298). Some anterior parapodia, including the first, usually have some slender capillary setae. Branchiae, in the form of digitate parapodial lobulae, are present or absent.

The genus *Polyodontes* Renier includes the following described species:

1. *Panthalis adumbrata* Hoagland (1920, p. 606, pl. 46, figs. 9-14) from the Philippine Islands.
Panthalis helleri Holly (1934, pp. 148-149, figs. 1, 2) from the Philippine Islands is probably identical with *P. adumbrata*.
2. *Polyodontes atro-marginatus* Horst (1917, pp. 133-134, pl. 29, figs. 5-7) from the Indo-Pacific.
3. *Eupompe australiensis* McIntosh (1885, pp. 135-139, pl. 21, figs. 4, 5, pl. 23, fig. 8, pl. 24, fig. 4) from Australia.
4. *Panthalis panamensis* Chamberlin (1919a, pp. 86-89, pl. 11, figs. 4-8, pl. 12, figs. 1-6) from Panama.
5. *Polyodontes maxillosus* Ranzani (see Fauvel, 1923, pp. 97-98, fig. 37) from southern Europe.
6. *Panthalis oculatea* Treadwell (1902, pp. 188-189, figs. 14-18) from the West Indies.
7. *Polyodontes sibogae* Horst (1917, pp. 131-132, pl. 28, figs. 4-10) from New Guinea. According to Fauvel (1932, p. 37) this is identical with *Polyodontes melanotus* (Grube).

The nature of the superiormost neuropodial setae of the following species is not known.

Eupompe aurorea Grube (1876, p. 71) from unknown locality.

Polyodontes gulo Grube (1876, p. 72) from the Red Sea.

Eupompe indica Beddard (1889, pp. 256-258) from the Mergui Archipelago.

Polyodontes tidemani Pflugfelder (1932, pp. 286-288, figs. 6-7) from the Indo-Pacific.

The following species, that have been described as *Polyodontes*, are transferred to other genera, as indicated:

Polyodontes gracilis Pflugfelder (1932, pp. 288-290, fig. 8) from Sumatra, to *Panthalis*.

Acoëtes magnifica Treadwell (1929, pp. 1-4, figs. 1-7) from the West Indies has penicillate setae. Fauvel (1932, p. 37) considered this identical with *Polyodontes melanonotus* (Grube). It appears, however, in view of the differences in the setae, that this view is not tenable. *A. magnifica* does agree reasonably well with the description of *Panthalis pustulata* Treadwell (1924, pp. 7-9, figs. 10-15) from the West Indies.

Polyodontes mortenseni Monro (1928a, pp. 569-572, figs. 19-24) from Panama has penicillate setae, hence a *Panthalis*.

The collections of the Allan Hancock Pacific Expeditions include 3 species of *Polyodontes* as described below.

Polyodontes oculea (Treadwell)

Plate 24, Figs. 294-299

Panthalis oculea Treadwell, 1902, pp. 188-189, figs. 14-18.

Polyodontes oculea Monro, 1928a, pp. 572-575, figs. 25-30.

Collections.—216-34, 502-36. Three anterior fragments.

The first parapodium (segment 2) is elongated (pl. 24, fig. 294) considerably more than found by Monro (1928a, fig. 26) but lacks the contraction wrinkles indicated by the latter. The second parapodium is notably shorter, resembling those more posteriorly (pl. 24, fig. 296). Median neuropodia are truncate, deepest distally (pl. 24, fig. 295). The superior neuropodial setae are slender, tapering, slightly thickened (pl. 24, fig. 299) where they emerge from the parapodial lobe, the serrations obscure. Median neuropodial setae have a long, slender appendage (pl. 24, fig. 297). Inferiormost setae are only weakly sickle-shaped, the point long, the serrations more or less distinct (pl. 24, fig. 298).

Elytra are entire, the surface smooth, without hooks or spines, translucent, with a narrow black border where they are left uncovered by the preceding elytrum. At the anteroectal edge the margin is recurved dorsally to form a pouch. From the fourth segment, the anterior face of the parapodium has a few, short, branchial lobes.

The base of the median antenna arises near the posterior margin of the prostomium and its surface is covered with minute papillae as shown by Monro (1928a, fig. 25). Because of these characteristics, the identity

of *P. oculatea* with *P. melanonotus* (Grube) suggested by Fauvel (1932, p. 37) seems unlikely.

Distribution.—West Indies; Panama; Lower California; Mexico. Subintertidal to 20 fms.

***Polyodontes panamensis* (Chamberlin)**

Plate 24, Figs. 289-292

Panthalis panamensis Chamberlin, 1919a, pp. 86-89, pl. 11, figs. 4-8, pl. 12, figs. 1-6.

Collection.—198-34. One specimen.

A single, anterior fragment consists of 36 segments. The prostomium and first segment had withdrawn into the oral area and could be observed only by laying open the proboscoidal region. The prostomial parts and its appendages are arranged about as shown by Chamberlin (1919a, p. 86) but the ommatophores are more conspicuous, the large black eyes occupying at least the distal two thirds of the stalk. The first parapodium is larger than the one following, and its ventral cirrus (pl. 24, fig. 290) both thicker and longer than those following (pl. 24, fig. 289). Elytra are circular to transversely elongated (pl. 24, fig. 291), the point of attachment near the external margin. They are translucent, smooth, with entire margin, the texture finely and uniformly reticulated. No parapodial branchiae have been observed.

Setae include a superior fascicle of numerous, long, slender spinose pointed setae, a median fascicle with 6 to 8 heavy, aristate setae (pl. 24, fig. 292), and a ventral fascicle of about 10 serrulated setae (pl. 24, fig. 293).

This species is transferred to the genus *Polyodontes* because it lacks true penicillate setae and has, instead, long, pointed, superior neuropodial setae.

Distribution.—Panama; Galapagos. Shore to 89 fms.

***Polyodontes frons*, new species**

Plate 25, Figs. 300-308

Collection.—443-35 (Holotype). One specimen.

A single, more or less complete individual consists of prostomium and 37 setigerous segments, and a few regenerating segments at the posterior end. It is pale except for black eyes and dusky crescents on the elytra. The dorsum is broadly exposed through about the first 20 segments, where the body is broadest.

The everted proboscis is pale, proximally smooth, and terminates dorsally in a long, tapering median papilla and 6 shorter papillae on each side. The ventral side is similar but the median papilla is smaller. Jaw pieces are amber colored, the 4 main fangs with darker tips; the lateral elongations have 5 teeth on each piece, but the lower left has 6 teeth.

The prostomium is pale, approximately trapezoidal, widest posteriorly. The ommatophores are elongate, inserted near the anterior margin of the prostomium and projecting anteriorly almost as far as the style of the median antenna (pl. 25, fig. 300). The median antenna has a long, basal stalk that extends posteriorly nearly to the posterior margin of the prostomium, its article is tapering and extends slightly beyond the lateral antennae and the ommatophores (pl. 25, fig. 300). The paired prostomial antennae are smaller than the median and inserted ventral to the ommatophores, and continuous with the prostomial lobes. They are only slightly visible when the prostomium is viewed from the dorsum. Palpi are pale, long, tapering, 5 or 6 times as long as the prostomium is wide.

The peristomium or first segment is directed anteriorly at the sides of the prostomium. Its 2 pairs of cirri resemble the prostomial cirri, but they extend distally beyond them (pl. 25, fig. 300). The parapodia of the second segment (first parapodial segment) are directed laterally (pl. 25, fig. 302). They are notably longer than those of the next segment (pl. 25, fig. 303) and have a ventral cirrus that is both longer and thicker. The first parapodium has a small dorsal fascicle of about 10 slender setae, and a larger, fan-shaped ventral fascicle of about 35 setae. The ventral setae are long, slender, tapering, smooth or nearly so, but some of the ventral ones have a slightly enlarged spiny area near the point where they emerge from the parapodial lobe. More posterior parapodia resemble one another more nearly in that the neuropodial lobe is shorter in proportion to its length.

A typical parapodium, from the thirty-fifth segment (pl. 25, fig. 301), has a small papillar notopodium, provided with a slender, pale aciculum, and a few (6 to 10) slender capillary setae, visible only under higher magnification. The neuropodium has pale yellow setae of 3 kinds, (1) a superior fascicle of 15 to 20 pointed, tapering setae, obscurely pectinated at the widest part (pl. 25, fig. 307) with a long, slender stalk, (2) a median fascicle of 12 to 15 stout, acicular, aristate setae (pl. 25, fig. 308), and (3) an inferior fascicle of about 10, sickle-shaped, serrated setae (pl. 25, fig. 305, 306).

The elytra are smooth, translucent along the lateral margins. Submarginally there is a diffuse pigmented crescent, open anteriorly. There are no elytral spines or prickles, but the lateral margins are curved upward and have a depressed pouch external to the elytral scar (pl. 25, fig. 304).

No papillar or lobular branchial structures could be discerned on the first 37 segments. The presence of pointed superior neuropodial setae and the absence of penicillate setae indicate its allocation to the genus *Polyodontes* as restricted above.

Polyodontes frons approaches *Polyodontes adumbrata* (Hoagland) (1920, p. 606) from the Philippine Islands. It has greatly elongate ommatophores and similar parapodial parts. *P. adumbrata*, however, was said to lack capillary notopodial setae, and the elytra do not have lateral pouches such as characterize *P. frons*. *P. maxillosus* Ranzani (see Fauvel, 1923, p. 97) has elongate ommatophores and elytra with lateral pouches, but the prostomium is proportionately much shorter and lacks the median ridge; also, there are branchial lobes from about the thirteenth segment.

Distribution.—Piñas Bay, Panama. In 20 fms.

Genus **PANTHALIS** Kinberg, char. emend.

Like *Polyodontes* Renier, but differs in that the neuropodial setae consist of the following kinds: (1) superior penicillate setae with a bushy top, the penicillae in some limited almost entirely to the tip, in others carried somewhat subdistally, (2) median stout aristate setae, and (3) inferior, sickle-like, serrulate setae. Some anterior parapodia usually have slender capillary setae. Branchiae, in the form of digitate parapodial lobulae, are absent or present.

The following species that have been described may be considered to be *Panthalis* as thus defined.

1. *Panthalis bicolor* Grube (1878b, p. 157) from Congo, Africa (see Augener, 1918, pp. 119-125). Monro (1928a, p. 572) considers this a likely synonym of *P. melanotus* Grube.
2. *Eupanthalis evanida* Treadwell (1926, p. 186) from the Philippine Islands (see Hartman, 1938, p. 127).
3. *Panthalis gracilis* Kinberg (1910, p. 26) from Rio de Janeiro, Brazil.

4. *Polyodontes gracilis* Pflugfelder (1932, pp. 288-290) from Sumatra. Penicillate neuropodial setae were described but whether or not parapodial branchiae are present was not stated. The parapodia were said to be like those of *P. tidemani* Pflugfelder, which, in turn, was referred to *Eupolyodontes sumatranus* Pflugfelder (1932, p. 282).
5. *Eupompe grubei* Kinberg (1910, p. 24) from Guajaquil, western South America.
6. *Panthalis jogasimae* Izuka (1912, pp. 68-71) from Japan. Monro (1928a, p. 568) reported this from Gorgona Island.
7. *Polyodontes mortenseni* Monro (1928a, pp. 569-572) from Panama.
8. *Panthalis melanonotus* Grube (1876, p. 71) from the Philippine Islands (see also *P. bicolor* Grube, above).
9. *Panthalis oerstedii* Kinberg (1855, p. 387) from Sweden (see Fauvel, 1923, p. 98, for synonymy).
10. *Panthalis pacifica* Treadwell (1914, pp. 184-186) from southern California.
11. *Panthalis pustulata* Treadwell (1924, pp. 7-9) from the West Indies. This includes *Acoëtes magnifica* Treadwell (1929, pp. 1-4) from the West Indies.

The following species, that have been described as *Panthalis*, are perhaps to be considered as follows:

- P. adumbrata* Hoagland (1920, p. 606) from the Philippines (see *Polyodontes*, page 82).
- P. helleri* Holly (1934, pp. 148-149) from the Philippines, identical with *P. adumbrata*.
- P. edriophthalma* Potts (1910, pp. 345-346) from the Indian Ocean, a *Eupanthalis* (see Fauvel, 1932, pp. 41-42).
- P. nigromaculata* Grube (1878b, pp. 50-51) from the Philippines, a *Eupanthalis* (see Horst, 1917, pp. 134-135).
- P. oculea* Treadwell (1902, pp. 188-189) from Puerto Rico, a *Polyodontes* (see Monro, 1928a, pp. 572-573).
- P. panamensis* Chamberlin (1919a, pp. 86-89) from Panama (see *Polyodontes*, page 82).

Panthalis pacifica Treadwell

Plate 26, Figs. 309-312

Panthalis pacifica Treadwell, 1914, pp. 184-186, pl. 11, figs. 1-7.

Collections.—?244-34, 492-36. Two anterior fragments.

An anterior fragment of about 23 segments (492-36), with elytra more or less firmly attached, retains some pigment in the elytra. The

prostomium, with ommatophores, is not quite half again as long as wide. The smaller sessile eyes are located near the lateral margins, the anterior eyes on short, thick stalks. The median antenna is inserted near the middle of the prostomium. There is a shallow median sulcus (pl. 26, fig. 309).

Setae include superior penicillate (pl. 26, fig. 310), median aristate (pl. 26, fig. 311) characterized by their spinose tips, and inferior, scythe-like setae (pl. 26, fig. 312). There are about 7 penicillate setae in the twentieth parapodium, about 14 larger aristate setae and 5 similar smaller ones. The inferior scythe-like setae are strongly spinose.

Another specimen (244-34) is macerated, but agrees with *P. pacifica* in that the ommatophores are short, stout, the median antenna is inserted in the same way, the setae are markedly spinose. Sessile eyes cannot be made out. There is, however, a diffuse dark spot in the area where they would be.

Numerous specimens, in the author's collection, from southern California, indicate that this is the most common species of Polyodontidae in the subintertidal zone, where the substratum is green or black mud. It constructs thick-walled, finely matted, mud masses or balls, from 1 to 6 or 8 inches long. Each mass is usually inhabited by a single individual, but two, lying end to end, have occasionally been seen. The outer color is that of the mud inhabited, the smooth lining is usually rust colored. The tubes, though occurring in soft, oozing mud, are too toughly matted to be torn without disrupting the contents.

Distribution.—Southern California (common); Point Tosca, Lower California, Mexico; ?Bahia Honda, Panama. Subintertidal to 50 fms.

***Panthalis marginata*, new species**

Plate 26, Figs. 313-318

Collection.—770-38 (Holotype). One specimen, fragmentary.

The palpi and tentacular cirri of the first (apodous) segment are transversely barred with black on the dorsal and lateral sides; the elytra are brown, with white margin. The first elytra are elongated in anterior-posterior direction and have an elongated, subrectangular flap at their ectoposterior portion (pl. 26, fig. 313). This flap lies normally over the long ventral cirrus of the first, and all of the second, parapodium.

The first parapodium (second segment) is enlarged, modified, provided with a digitate notoacicular lobe and numerous slender, capillary notopodial setae, and a broad collar-like neuropodium (pl. 26, fig. 314) with a large fascicle of setae. The ventral cirrus is long, stout, tapering. The second parapodium is smaller and resembles those more posteriorly. It has a slender, dorsal digitate notoacicular lobe and a deep neuropodium broadest distally (pl. 26, fig. 315). Its setae resemble those in more posterior parapodia.

A typical parapodium contains slender, capillary notopodial setae, and neuropodial setae as follows: (1) superior penicillate setae in which the tip is drawn out in a point (pl. 26, fig. 317), (2) stout, median aristate setae with an appendage (pl. 26, fig. 318), and (3) inferior, sickle-shaped, serrulate setae (pl. 26, fig. 316). The ventral cirrus is stout, tapering, and does not extend distally so far as the neuropodial setae.

No branchiae have been observed.

P. marginata resembles *Polyodontes gracilis* Pflugfelder (1932, p. 288) from Sumatra (see also page 87) in its penicillate setae and in having brown elytra. *P. gracilis*, however, was said to have parapodia like those of *Eupolyodontes sumatranus* Pflugfelder, presumably therefore with digitate branchiae. The single incomplete fragment available for study does not permit a complete description.

Holotype.—AHF no. 19.

Distribution.—Off San Jose Light, Guatemala. In 7 to 11 fms.

Family **Pisionidae** Levinsen, revised

Elongate, subcylindrical, consisting of numerous similar segments. The proboscis cylindrical, protrusile, provided distally with terminal papillae and with 4 chitinous jaw pieces. Prostomium more or less reduced, depressed, produced dorsally between the first few segments; without attached antennae, or with a median cirriform one at its anterior margin. Eye spots 1 or 2 pairs, those of a side sometimes more or less coalesced. First segment (buccal) greatly elongated and modified so as to project forward at sides and in front of the prostomium, provided with 3 pairs of appendages (cirri), with or without acicula.

Parapodia subbiramous, the notopodium represented only by an aciculum, the neuropodium with an elongated ramus with simple, acicular setae and composite falcigerous hooks.

The PISIONIDAE constitute a small, little known family, known through only a few records. Their affinities are possibly with the HESIONIDAE on the one hand, and with the scale-bearing chaetopods, or more nearly the SIGALIONIDAE, on the other. The proboscis is clearly of the scale-worm type. The paired prostomial antennae are inserted on the peristomial segment, as in some of the SIGALIONIDAE. In the new genus, *Pisionella*, there is a well developed median antenna. Notopodia are inconspicuous, but the neuropodia are stout and well provided with setae.

Two genera, *Pisione* Oersted and *Praegeria* Southern, have been attributed to this family. The type of *Praegeria*, *P. remota* Southern, sufficiently resembles the type of *Pisione*, *P. oerstedii* Grube, that the retention of the genus *Praegeria* is unnecessary. *P. oerstedii* Grube and *P. remota* (Southern) differ from one another in the details of their parapodial and setal structures.

More recently, Augener (1924, p. 300) described a *Pisione*, *P. germanica*, from the North Sea, which agrees with the description of *Praegeria remota* Southern, from Ireland.

Pisione contracta Ehlers (1901, p. 64) from Callao, Peru, has been shown to be the same as *P. oerstedii* Grube (Augener, 1924, p. 298). In conclusion, therefore, 2 valid species are known to occur, *Pisione oerstedii* Grube, from Peru, Ceylon, and New Zealand (Augener, 1924, p. 298; 1926, p. 445) and *Pisione remota* (Southern) from Ireland and the North Sea.

The Hancock collections include another species, *Pisionella hancocki* (described below), clearly of this family, but differing sufficiently in its structure to warrant the erection of a new genus. In several of its characters it is more primitive than are the species of the genus *Pisione*. The prostomial lobe is less reduced, its antennae are cirriform and little modified.

Genus PISIONE Grube, Ehlers

Pisione Ehlers, 1901, p. 60.

Praegeria Southern, 1914, pp. 63-64; Augener, 1926, p. 445.

Prostomium produced dorsally between the first few segments, without attached antennae or other appendages, but with 2 pairs of eye spots in which the 2 of a side may be more or less coalesced. Proboscis with 7 pairs of terminal papillae and 2 pairs of stout, chitinous jaws.

First segment modified, provided with a pair of stout acicula and 3 appendages, a small papillar cirrus on its median side (the transposed prostomial antenna) and 2 cirriform, peristomial tentacles laterally.

Parapodia subbiramous, the notopodium represented only by a dorsal cirrus and an aciculum. Neuropodia well developed, provided with stout, simple setae and composite falcigerous setae. Anal cirri 2, long, cirriform.

Pisione oerstedii Grube

Plate 27, Figs. 321-325

Pisione oerstedii Grube, 1856, p. 175; Ehlers, 1901, p. 61; Augener, 1924, p. 298; 1926, p. 445.

Pisione contracta Ehlers, 1901, p. 64.

Collection.—375-35. About 30 specimens.

Length 20 to 48 mm; number of segments 125 to 160. Proboscis, everted in some, with 7 dorsal and 7 ventral terminal papillae (pl. 27, fig. 321) and 2 pairs of stout, curved jaws. The third segment (second setigerous) has a stout cirrophore with an elongate dorsal cirrus (pl. 27, fig. 322). Its simple setae resemble those in more posterior segments. The embedded acicula are either straight, rodlike, or distally curved (pl. 27, fig. 325). Some acicular setae occur singly in a parapodium, or sometimes in twos (pl. 27, fig. 324). Inferior to them are about 6 composite, falcigerous setae (pl. 27, fig. 323).

Distribution.—Peru; Chile. Intertidal. In addition, Augener, who had access to Ehlers' types at the Hamburg Museum, recorded it from New Zealand and Ceylon. The former is based on a single complete specimen, only 2 mm long. This is conspicuously less than the length typical for the Peruvian individuals (see above). The Ceylon record is based on a single specimen, indicated as "unbestimmt"! (Augener, 1924, p. 299).

PISIONELLA, new genus

Prostomium with a conspicuous, median, cirriform antenna, inserted on a cirrophore at the anterior margin of the prostomium. Buccal segment with 3 pairs of cirriform cirri, of which 1 pair perhaps represents the paired prostomial antennae. No acicula or setae in the first segment. Second segment with a ventral cirrus resembling the superiormost cirrus of the buccal segment, and with globular dorsal cirrus, terminating in

a slender papilla. Third segment with a long, slender, cirriform dorsal cirrus and a globular ventral cirrus. From the fourth segment posteriorly, both dorsal and ventral cirri are globular. Parapodia subbiramous, the notopodium represented by an embedded aciculum, the neuropodium well developed, provided with an aciculum, 1 or 2 simple, blunt, acicular setae, and several composite setae. These setae consist of a shaft with a longitudinal series of spinelets in 2 rows, disposed along the outer, ectal edge of the shaft, and an appendage with a slender falcate piece, with a row of delicate spinelets along the cutting edge.

Pisionella hancocki, new species

Plate 27, Fig. 326; Plate 28, Figs. 327-333

Collections.—366-35 (Holotype), 375-35. About 14 specimens.

Long, slender, depressed cylindrical, tapering gradually in both directions from near middle of body. Number of segments 120 or more; length of a smaller, 120 mm individual is 35 mm, of a larger, incomplete individual of 80 segments is 28 mm. Greatest width, at about the fiftieth segment, is 1.04 mm without, 2.07 mm with parapodia. The proboscis is visible dorsally through the body wall as a dark streak extending through the first fourteen segments.

Prostomium slightly elevated, produced between the first few segments, extending posteriorly to the fourth segment (third setigerous); provided at its anterior margin with a median cirriform antenna, that is about half as large as the dorsalmost cirrus of the first segment. Two pairs of deep-seated eye spots, of which one or both pairs are more or less fused, are present near the middle of the prostomium (pl. 27, fig. 326). The proboscis (dissected) is lined with dark pigment. It has 2 dorsal and 2 ventral stout jaws (pl. 28, fig. 329), and 19 or 20(?) soft, terminal papillae. Their exact number could not be ascertained after dissection.

First segment greatly modified, enlarged, extending forward at the sides of the prostomium so that its inner, proximal base is in contact with the base of the prostomial antenna. At its terminal end it is provided with 3 tentacular cirri, the dorsalmost about twice as large as the prostomial antenna, the median one about as large as the prostomial antenna, and a long, stout ventral cirrus (pl. 27, fig. 326) about as long as the first 6 normal segments. No setae or acicula have been made out in this segment.

Second segment (first setigerous) provided with parapodia that are less than half as long as those immediately following. It has a stout, subulate ventral cirrus on a well-developed cirrophore (pl. 28, fig. 328) and a globular dorsal cirrus. The third segment has a stout dorsal cirrus and a globular ventral cirrus (pl. 28, fig. 327). From the fourth segment, the dorsal and ventral cirri are globular, with a terminal filament (pl. 28, fig. 331).

In addition to dorsal and ventral cirri, some individuals have a long, cirriform appendage (nephridial papilla?) inserted on the ventral body wall near the point where the foot joins the body (pl. 28, fig. 331). A similar structure has been observed in some individuals of the nearly related *Pisione oerstedii* Grube. When present, it occurs on all segments from the fifth, posteriorly.

Each setigerous segment has yellow dorsal and ventral acicula. That of the second segment differs slightly in shape from those more posteriorly. It is somewhat cuspidate (pl. 28, fig. 330). From the third segment a stout, blunt aciculum emerges from the distal end of the parapodium (pl. 28, fig. 333), and lies just dorsal to the setal fascicle. Composite setae resemble one another throughout. The shaft is provided with 2 longitudinal rows of spinelets, on the dorsal or cutting edge; the appendage is falcate, with a terminal fang and a single row of fine spinelets along the cutting edge (pl. 28, figs. 332, 330). A typical median parapodium has an embedded dorsal aciculum, 2 ventral acicula of which the dorsalmost emerges from the neuropodium, and about 4 composite setae inferior to the aciculum (pl. 28, fig. 331). Anal cirri, if originally present, have been lost from the collections.

Holotype.—AHF no. 20.

Distribution.—Callao, Peru; Independencia Bay, Peru. Intertidal to 8 fms.

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PLATE 1

Figures 1 to 5, *Aphrodita japonica*: Fig. 1, stout superior neuropodial seta from a median parapodium (430-35), x 290; Fig. 2, a median neuropodial seta, with attached sheath, from the same parapodium, x 290; Fig. 3, tip of a long, slender dorsal seta, showing hooked tip, x 290; Fig. 4, inferior neuropodial seta, from same parapodium as that shown in Fig. 1, x 290; Fig. 5, inferior neuropodial seta (632-37) with pilose cap attached, x 130.

Figure 6, *Aphrodita armifera*: Inferior neuropodial seta from a median parapodium (D 93), x 290.

Figures 7 and 8, *Aphrodita refulgida*: Fig. 7, superiormost neuropodial seta from twelfth parapodium, x 290; Fig. 8, inferior neuropodial seta from same parapodium, x 290.

Figures 9 and 10, *Aphrodita parva*: Fig. 9, an inferior neuropodial seta from a median parapodium, showing small lateral spur, x 290; Fig. 10, a superior neuropodial seta from the same parapodium, with pilosity, x 290.

Figures 11 to 15, *Aphrodita falcifera*: Fig. 11, a median neuropodium (287-34), x 32; Fig. 12, tip of an inferior neuropodial seta from same parapodium, x 66; Fig. 13, tip of a superior neuropodial seta from the same parapodium, x 66; Fig. 14, distal end of inferior neuropodial seta, x 290; Fig. 15, prostomial lobe, x 12.5.

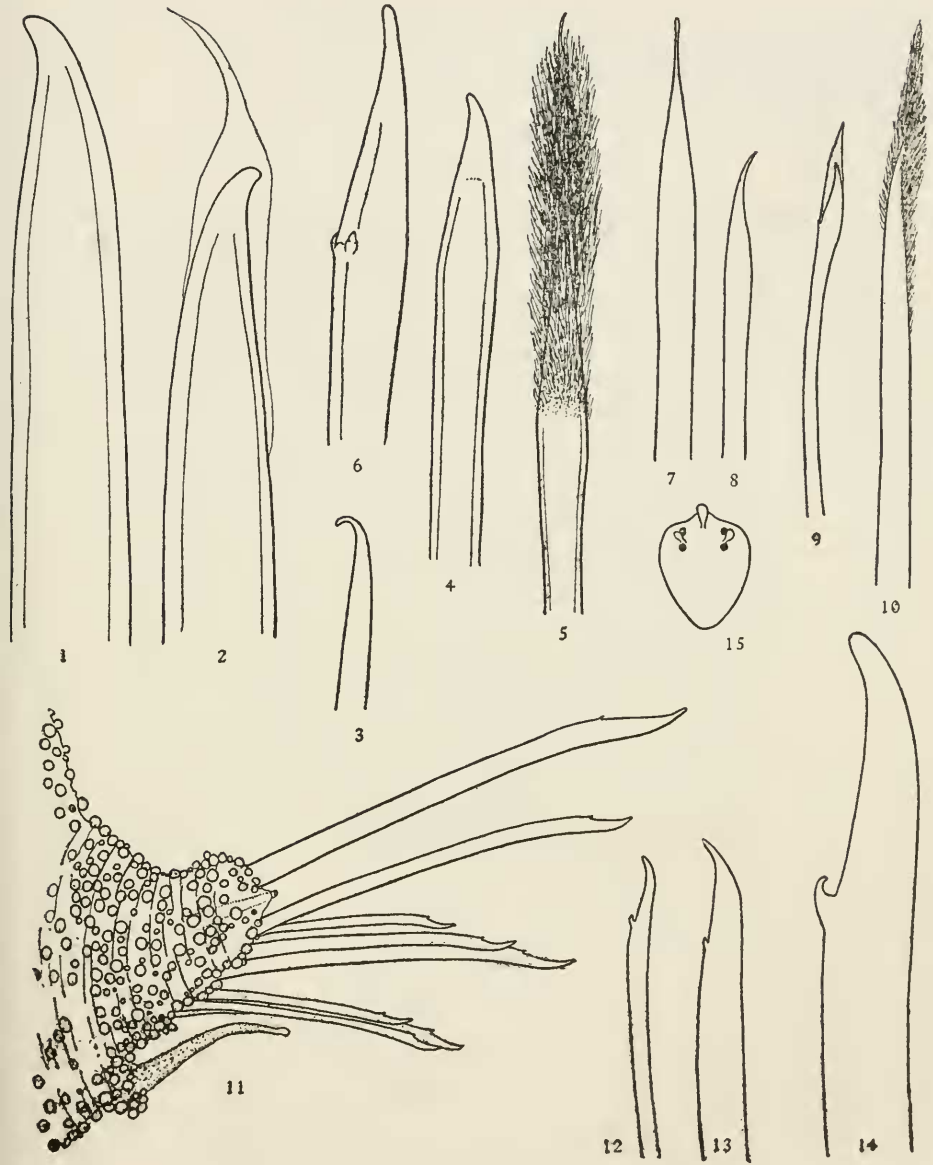


PLATE 2

Figures 16 to 30, *Pontogenia laeviseta*: Fig. 16, prostomium in dorsal view, ventral eyes indicated by cross bars, median antenna turned unnaturally to the right (863-38), x 25; Fig. 17, a median parapodium, some of the notopodial setae pulled out when the debris was cleared away; scale and dorsal fascicles turned forward so as to indicate the shape of the elytrum; parapodial papillae not shown, x 12.5; Fig. 18, a neuropodium from the median region (244-34), x 32; Fig. 19, a superior neuropodial seta from the second segment, x 290; Fig. 20, a ventralmost neuropodial seta from a median parapodium (244-34), x 130; Fig. 21, tip of a median neuropodial seta from the same parapodium, x 130; Fig. 22, tip of a dorsalmost notopodial seta from a median parapodium, x 66; Fig. 23, a superior neuropodial seta from a posterior parapodium, x 290; Fig. 24, an inferior neuropodial seta from a posterior parapodium, x 290; Fig. 25, part of the basal area from a median elytrum, indicating the distribution of the papillae near the point of attachment, x 130; Fig. 26, parapodium from the third segment, with greatly elongate dorsal cirrus, and heavy notopodial setae, x 25; Fig. 27, distal end of seta shown in Fig. 22, enlarged, x 290; Fig. 28, an inferior neuropodial seta from second segment, with 2 rows of spinelets, x 290; Fig. 29, tip of stout, superior notopodial seta from third segment, x 290; Fig. 30, tip of a ventralmost notopodial seta from a median parapodium, with a few asperities, x 290.

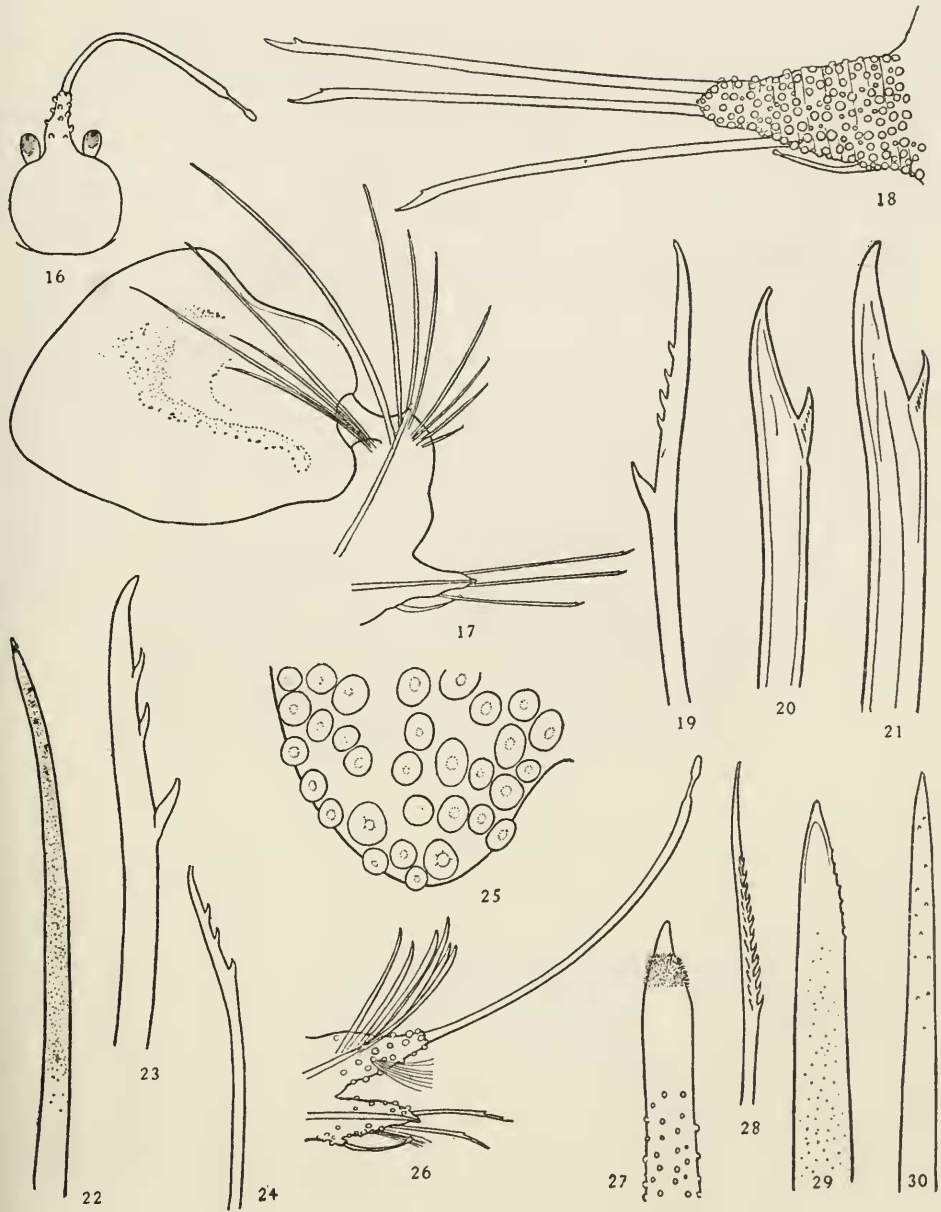


PLATE 3

Figures 31 and 32, *Iphione ovata*: Fig. 31, tip of a neuropodial seta from a median parapodium, x 290; Fig. 32, distal end of a neuropodium from near middle of body, setae indicated, x 32.

Figures 33 to 37, *Arctonoë vittata*: Fig. 33, anterior end in dorsal view, x 18.5; Fig. 34, neuropodial seta from fifteenth parapodium, x 130; Fig. 35, an inferior neuropodial seta from second segment, x 290; Fig. 36, a notopodial seta from second segment, x 290; Fig. 37, a superior neuropodial seta from second segment, x 290.

Figures 38 to 42, *Eulagisca panamensis*: Fig. 38, tip of a minutely bifid neuropodial seta, x 290; Fig. 39, tenth parapodium in posterior view, some setae indicated; there are actually nearly 100 notopodial setae, some very fine, long, slender, others much thicker but about as long, also, a dorsoanterior series of short, slightly arcuate, nearly smooth setae, x 12.5; Fig. 40, a tapering notopodial seta from tenth parapodium, x 130; Fig. 41, distal end of a neuropodial seta, x 130; Fig. 42, sixth elytrum, from left side, in ventral view, x 12.5.

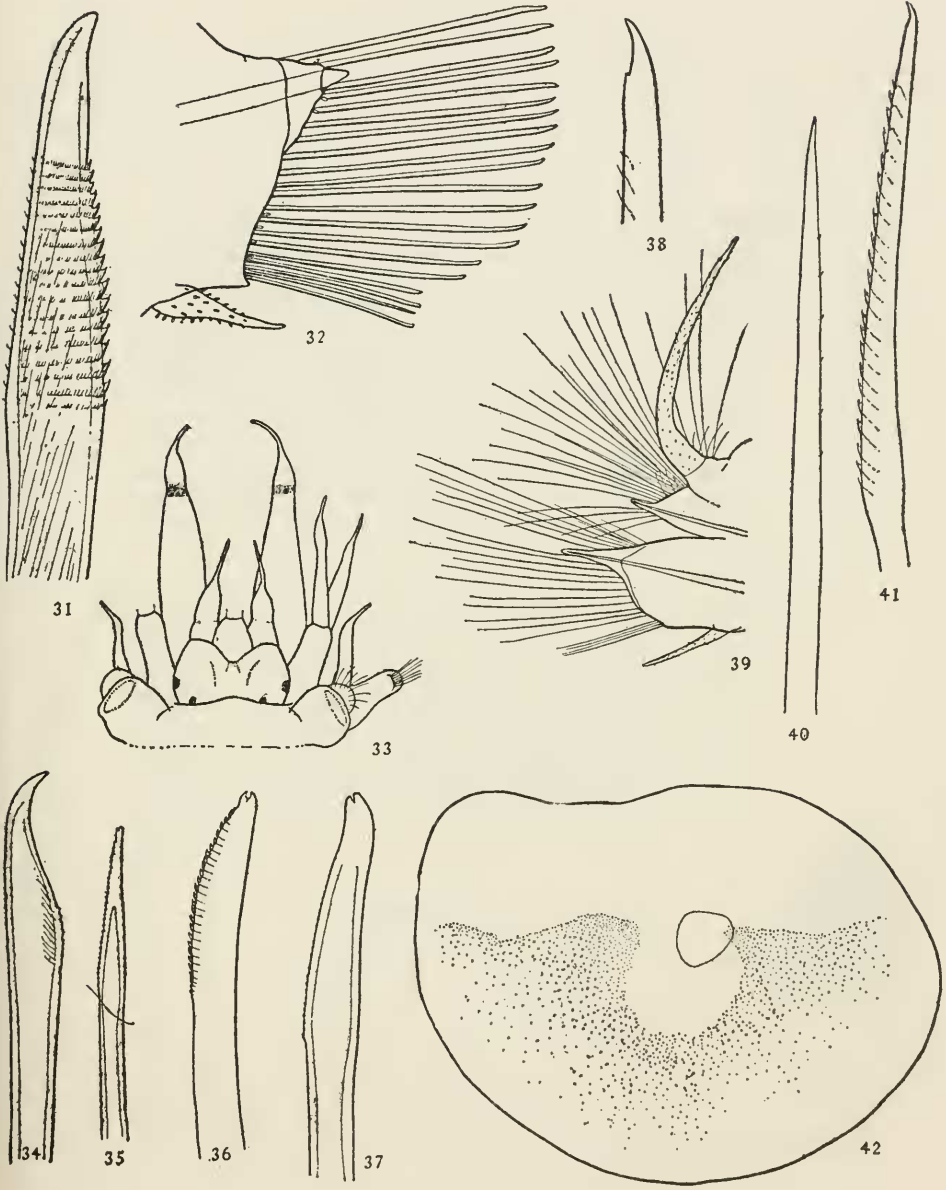


PLATE 4

Figures 43 to 50, *Halosydna glabra*: Fig. 43, first elytrum from right side, in dorsal view, stippling indicates pigmented pattern, x 12.5; Fig. 44, sixth elytrum from right side, from same individual as that shown in Fig. 43, x 12.5; Fig. 45, first elytrum, in dorsal view, showing distribution of macrotubercles and microtubercles, x 32; Fig. 46, macrotubercles and microtubercles from first elytrum, just posterior to the elytral scar, x 290; Fig. 47, dorsalmost notopodial seta from a median parapodium, x 290; Fig. 48, neuropodial seta from a median parapodium, x 290; Fig. 49, a long, pointed notopodial seta from a median parapodium, x 290; Fig. 50, portion of sixth elytrum from area near anterior concavity, indicating distribution of microtubercles and reticulated pattern, x 290.

Figures 51 to 55, *Halosydna*, sp. A: Fig. 51, a long notopodial seta from a median parapodium, x 290; Fig. 52, a neuropodial seta from a median parapodium, x 290; Fig. 53, a short notopodial seta from a median parapodium, x 290; Fig. 54, an elytrum from the left side, in dorsal view, showing distribution of macrotubercles (larger circles) and microtubercles (small circles), x 12.5; Fig. 55, portion of preceding elytrum over inner end of elytral scar, showing detail of pigmented area, x 290.

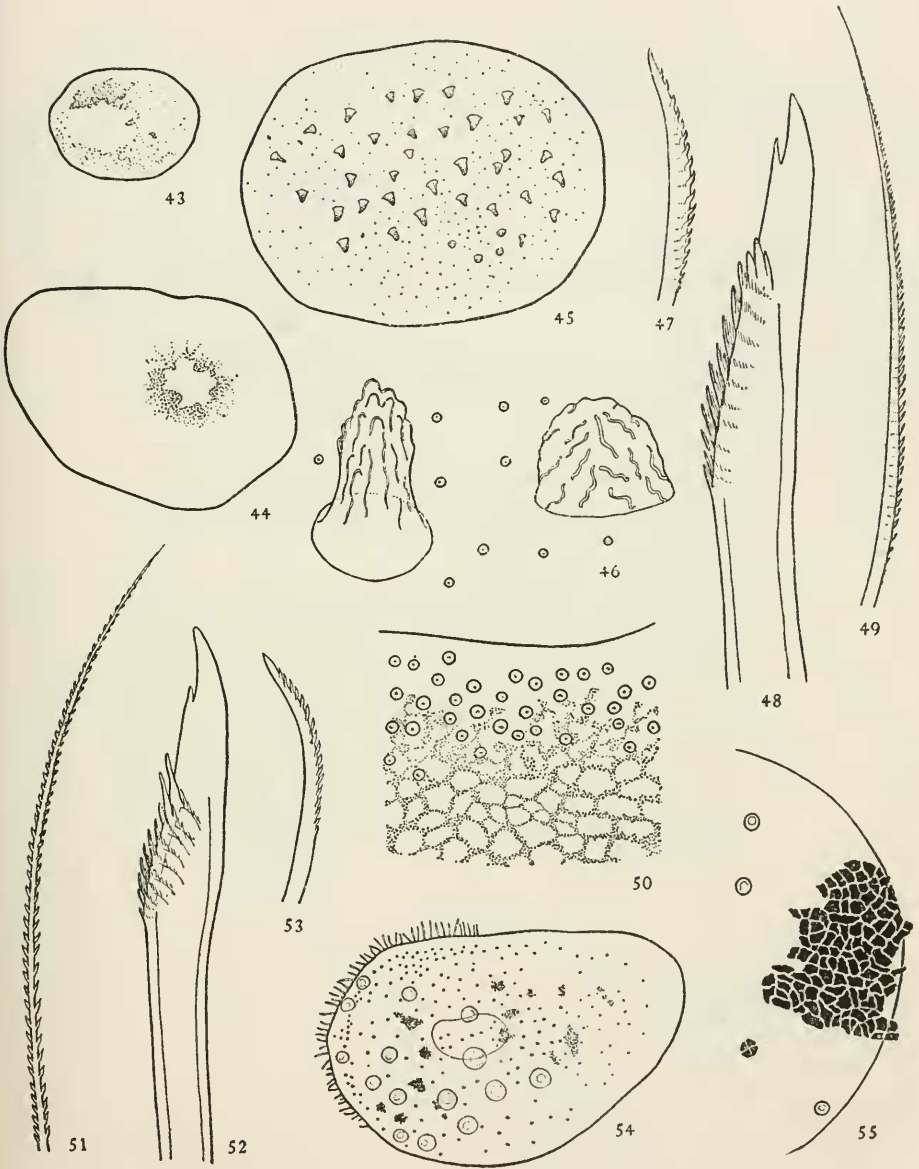


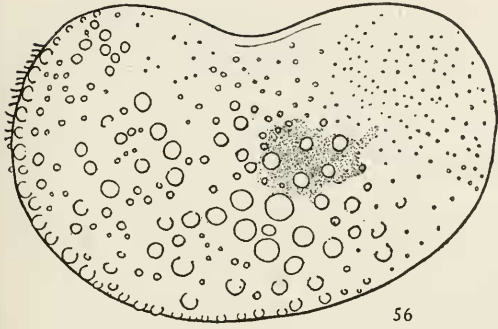
PLATE 5

Figure 56, *Lepidonotus versicolor*: Third elytrum from left side; fringe almost absent except for a few short filaments on some anterior elytra, x 18.5.

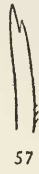
Figures 57 and 58, *Lepidonotus furcillatus*: Fig. 57, tip of a neuropodial seta from first parapodium, distally bifid, x 290; Fig. 58, a neuropodial seta from first parapodium, distally pointed, x 290.

Figures 59 to 61, *Lepidonotus versicolor*: Fig. 59, a superior neuropodial seta from segment 2, x 290; Fig. 60, a ventralmost neuropodial seta from segment 2, x 290; Fig. 61, prostomial lobe with antennae, x 18.5.

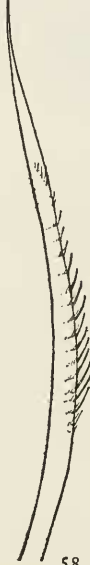
Figures 62 to 69, *Lepidonotus crosslandi*: Fig. 62, prostomial lobe, without antennae, x 30; Fig. 63, a dorsalmost neuropodial seta from third segment, x 290; Fig. 64, a ventralmost neuropodial seta from third segment, x 290; Fig. 65, a superior neuropodial seta from fourteenth segment, x 130; Fig. 66, an inferior neuropodial seta from fourteenth segment, x 130; Fig. 67, larger and smaller tubercles from second elytrum, from an area near the posterior margin, x 290; Fig. 68, outline of seventh elytrum, elytral scar indicated, x 12.5; Fig. 69, second elytrum, tubercles indicated by circles, pigmented area by stippling, x 32.



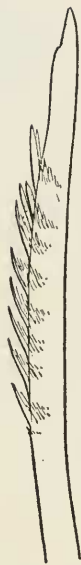
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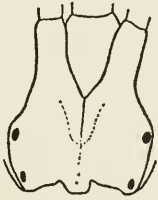
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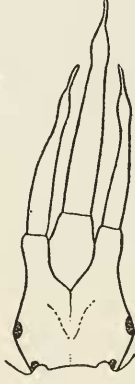
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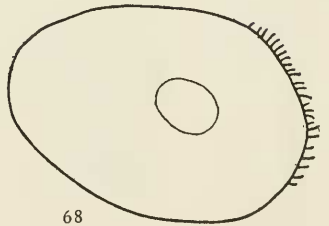
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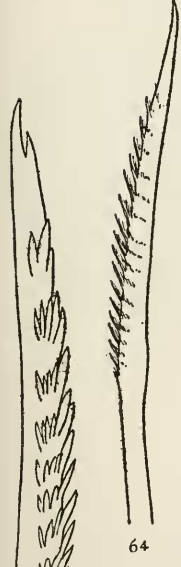
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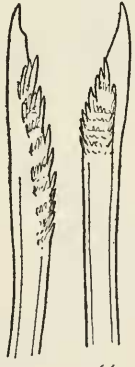
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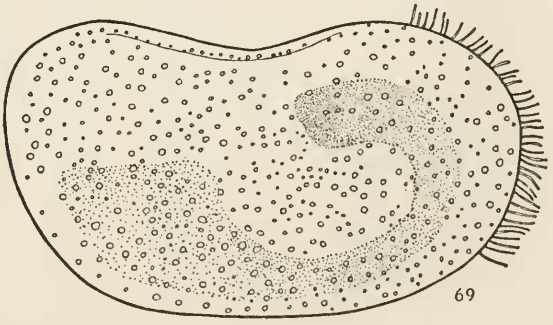
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PLATE 6

Figures 70 to 77, *Lepidonotus pomareae panamensis*: Fig. 70, first elytrum from right side, x 12.5; Fig. 71, sixth elytrum, from left side, x 5; Fig. 72, ninth elytrum, from right side, x 6; Fig. 73, a larger spine from first elytrum, in lateral view, x 66; Fig. 74, another, similar spine in dorsal view, x 66; Fig. 75, sixteenth parapodium, in posterior view, with some setae indicated; there are about 30 dark amber-colored neuropodial setae, x 12.5; Fig. 76, a shorter, falcate, superior notopodial seta from sixteenth parapodium, x 130; Fig. 77, a neuropodial seta from same parapodium, x 130.

Figures 78 to 82, *Lepidonotus hupferi*: Fig. 78, a smaller, pigmented patch, showing smaller and larger tubercles, and distribution of pigment, x 130; Fig. 79, a neuropodial seta from second parapodium, x 290; Fig. 80, a neuropodial seta from third parapodium, x 290; Fig. 81, an inferiormost neuropodial seta from a median parapodium; the dorsalmost are thicker and longer but have similar proportions, x 290; Fig. 82, outer, lateral portion of an elytrum; stippling indicates pigmented areas, circles indicate the larger tubercles, x 12.5.

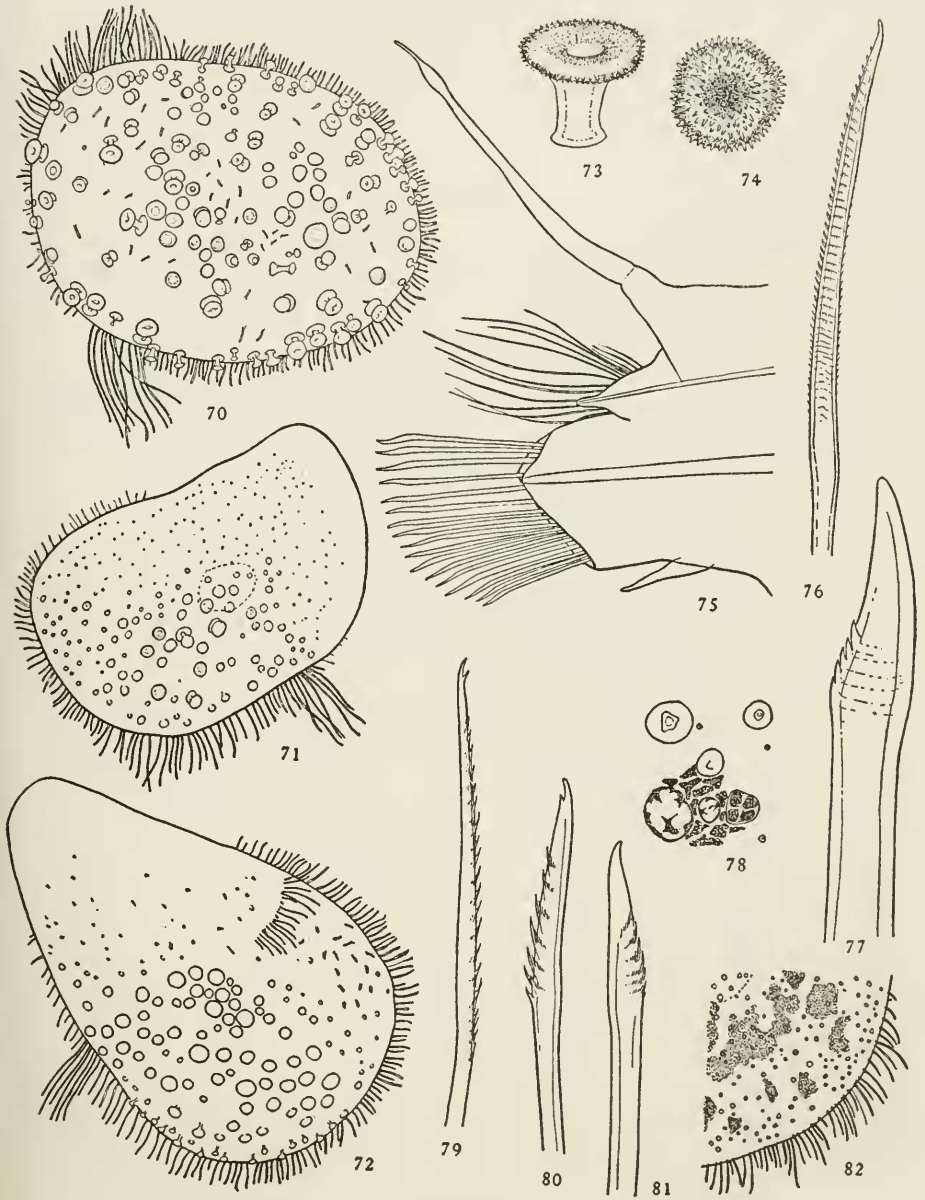


PLATE 7

Figures 83 to 95, *Lepidonotus nesophilus*: Fig. 83, prostomial lobe (814-38), x 32; Fig. 84, outline of tenth elytrum, in ventral view (148-34), x 12.5; Fig. 85, marginal fringe from first elytrum (814-38), x 290; Fig. 86, pattern of reticulated pigment from tenth elytrum, x 290; Fig. 87, first elytrum from right side, in dorsal view (814-38), x 32; Fig. 88, one of medium spines from near external margin, from first elytrum, x 290; Fig. 89, a spine from a posterior elytrum (148-34), x 290; Fig. 90, a tall macrotubercle from near the inner edge, from first elytrum, x 290; Fig. 91, a ventralmost neuropodial seta from first parapodium (second segment), x 290; Fig. 92, a dorsalmost neuropodial seta from the same segment, x 290; Fig. 93, a nearly entire inferior neuropodial seta from a median parapodium, x 290; Fig. 94, a more usual type of neuropodial seta, the superiormost from a median parapodium, x 290; Fig. 95, a notopodial seta from a median parapodium, x 290.

Figures 96 to 98, *Thormora johnstoni*: Fig. 96, prostomial lobe with antennae (525-36), x 32; Fig. 97, sixth elytrum from right side, in dorsal view, x 32; Fig. 98, portion of elytrum from near edge of sixth, x 290.

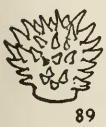
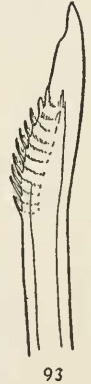
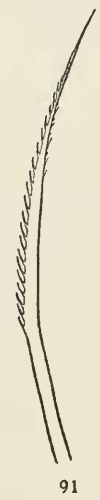
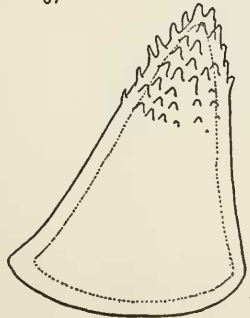
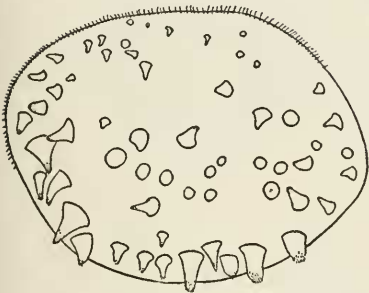
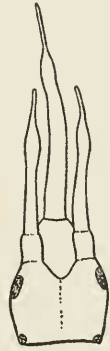
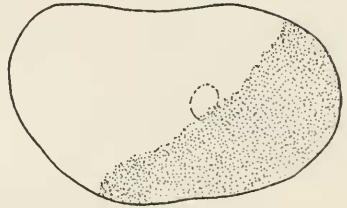
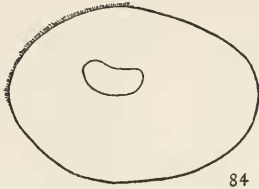
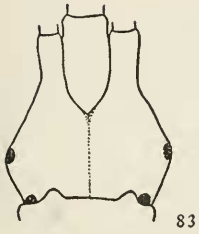


PLATE 8

Figures 99 to 104, *Lepidametria gigas*: Fig. 99, a superior neuropodial seta from a median parapodium, x 290; Fig. 100, an inferiormost neuropodial seta from the same parapodium, x 290; Fig. 101, an inferiormost neuropodial seta from third parapodium, x 290; Fig. 102, a notopodial seta from third parapodium (only two in a parapodium), x 290; Fig. 103, a median parapodium, x 32; Fig. 104, third parapodium (segment 4), x 32.

Figures 105 to 110, *Lepidametria virens*: Fig. 105, forty-second parapodium in anterior view, x 32; Fig. 106, parapodium from third segment, in anterior view, x 32; Fig. 107, a neuropodial seta from third segment, x 290; Fig. 108, an inferior neuropodial seta from forty-second segment, x 290; Fig. 109, a superiormost neuropodial seta from the same parapodium, x 290; Fig. 110, anterior end, including part of first right elytrum; eyes are deep seated, x 18.5.

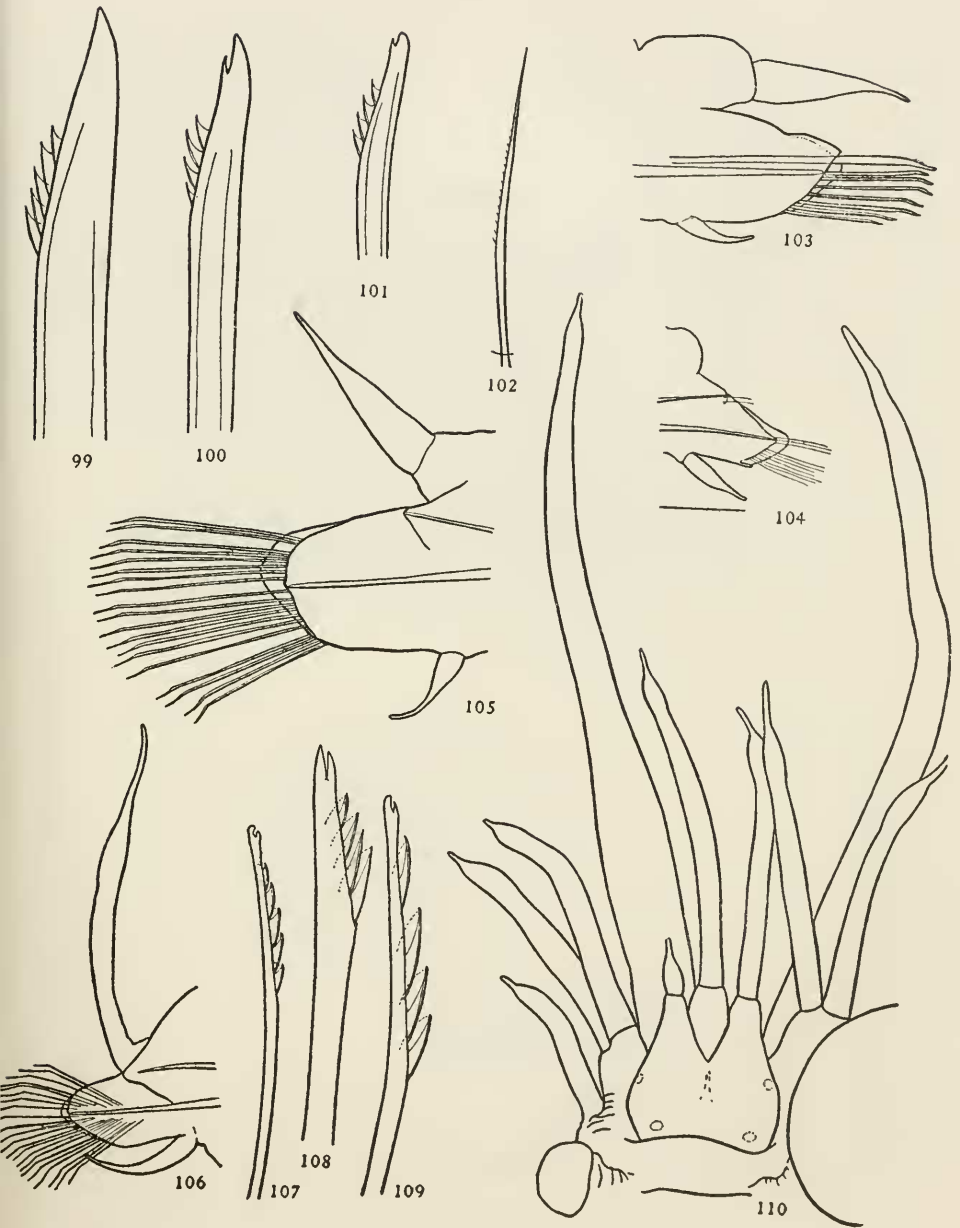
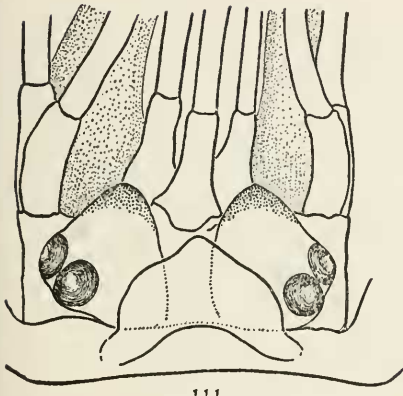
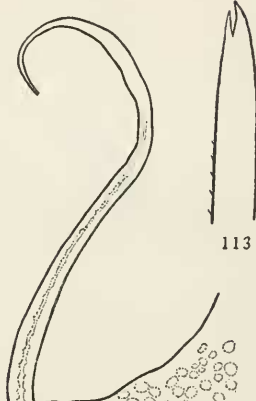


PLATE 9

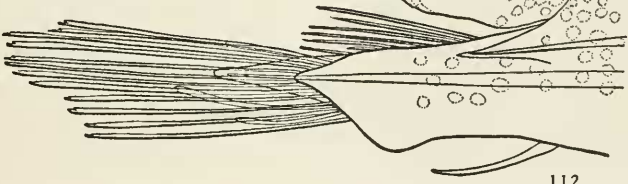
- Figures 111 to 118, *Hololepida veleronis*: Fig. 111, anterior end in dorsal view, with distal ends of antennae and palpi omitted, x 32; Fig. 112, sixteenth parapodium in posterior view, setae indicated, x 25; Fig. 113, tip of a neuropodial seta, x 290; Fig. 114, acicular notopodial seta from sixteenth parapodium, x 290; Fig. 115, neuropodial seta from same parapodium, x 130; Fig. 116, a supraacicular neuropodial seta from same parapodium, x 290; Fig. 117, a superior neuropodial seta from second segment, x 290; Fig. 118, second parapodium in anterior view, setae indicated, elytrum omitted, x 25.
- Figures 119 and 120, *Halosydna fuscomarmorata*: Fig. 119, a median elytrum, x 12.5; Fig. 120, a neuropodial seta from a median parapodium, x 290.



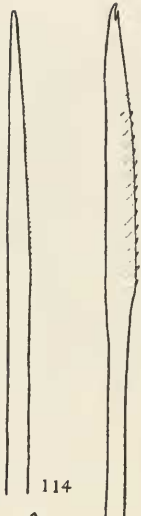
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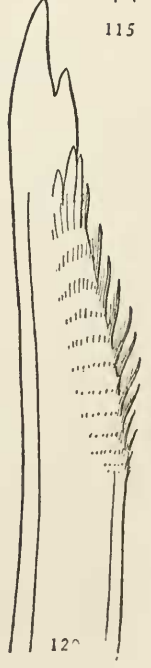
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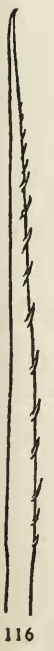
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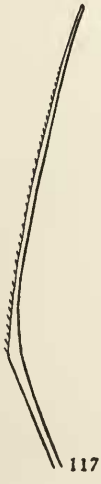
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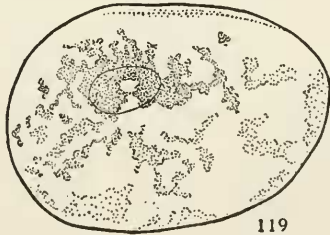
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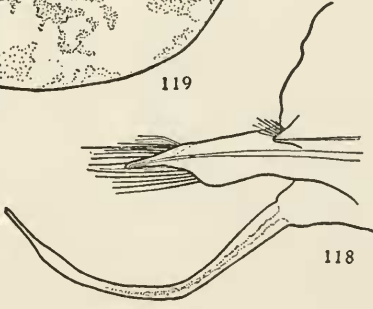
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PLATE 10

Figures 121 to 127, *Polynoë veleronis*: Fig. 121, anterior end, x 32; Fig. 122, second parapodium, elytrum omitted, x 32; Fig. 123, first elytrum in dorsal view, elytral scar indicated; stippled area is chocolate brown, preserved, x 32; Fig. 124, twentieth parapodium in posterior view, x 32; Fig. 125, a notopodial seta from twentieth parapodium, x 290; Fig. 126, an inferior neuropodial seta from the same parapodium, x 290; Fig. 127, a superior neuropodial seta from the same parapodium, x 290.

Figures 128 to 133, *Eunoë senta*: Fig. 128, dorsalmost neuropodial seta from a median parapodium, x 130; Fig. 129, an inferior-most neuropodial seta from the same parapodium, x 130; Fig. 130, a short, curved notopodial seta from the same parapodium, x 130; Fig. 131, tip of a long, notopodial seta from the same parapodium, x 130; Fig. 132, elytrum, in dorsal view, loose in vial with specimen, x 25; Fig. 133, one of smaller spines from anterior third of elytrum, x 290.

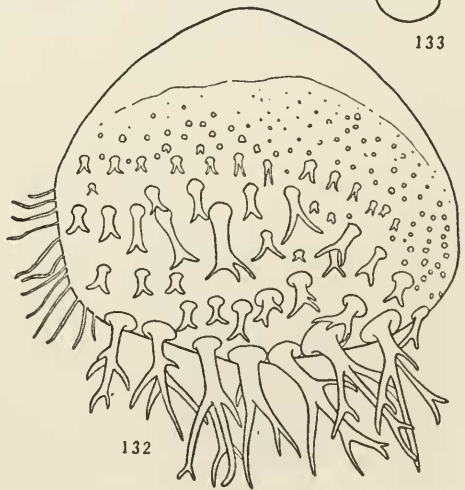
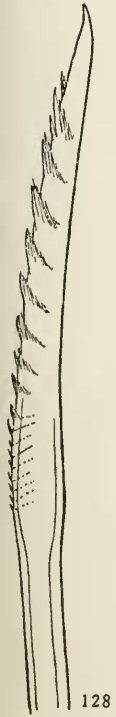
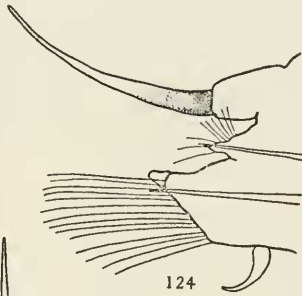
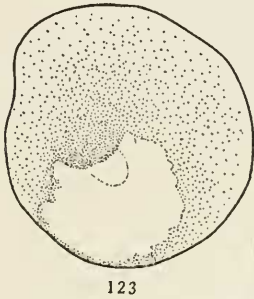
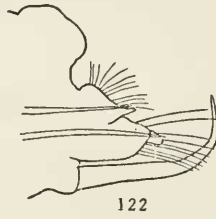
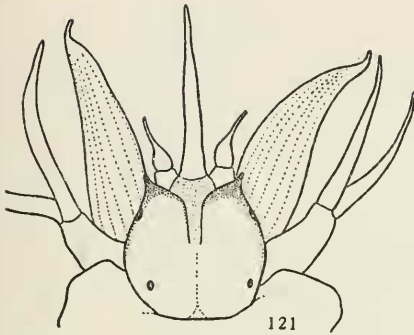


PLATE 11

Figures 134 to 140, *Eusigalion spinosum*: Fig. 134, elytrum, with ventral branchial lobe and scar dotted in, x 25; Fig. 135, prostomial lobe, x 30; Fig. 136, sixth parapodium, setae indicated, x 25; Fig. 137, part of a larger neuropodial seta from the forty-sixth parapodium, numbers at right refer to the number of articles in the appendage, counting from the base, x 290; Fig. 138, forty-sixth parapodium, elytrum turned back and only partly shown, setae omitted, x 25; Fig. 139, part of marginal fringe from the anteroectal margin of an elytrum, x 66; Fig. 140, a superior simple neuropodial seta from forty-sixth parapodium, x 290.

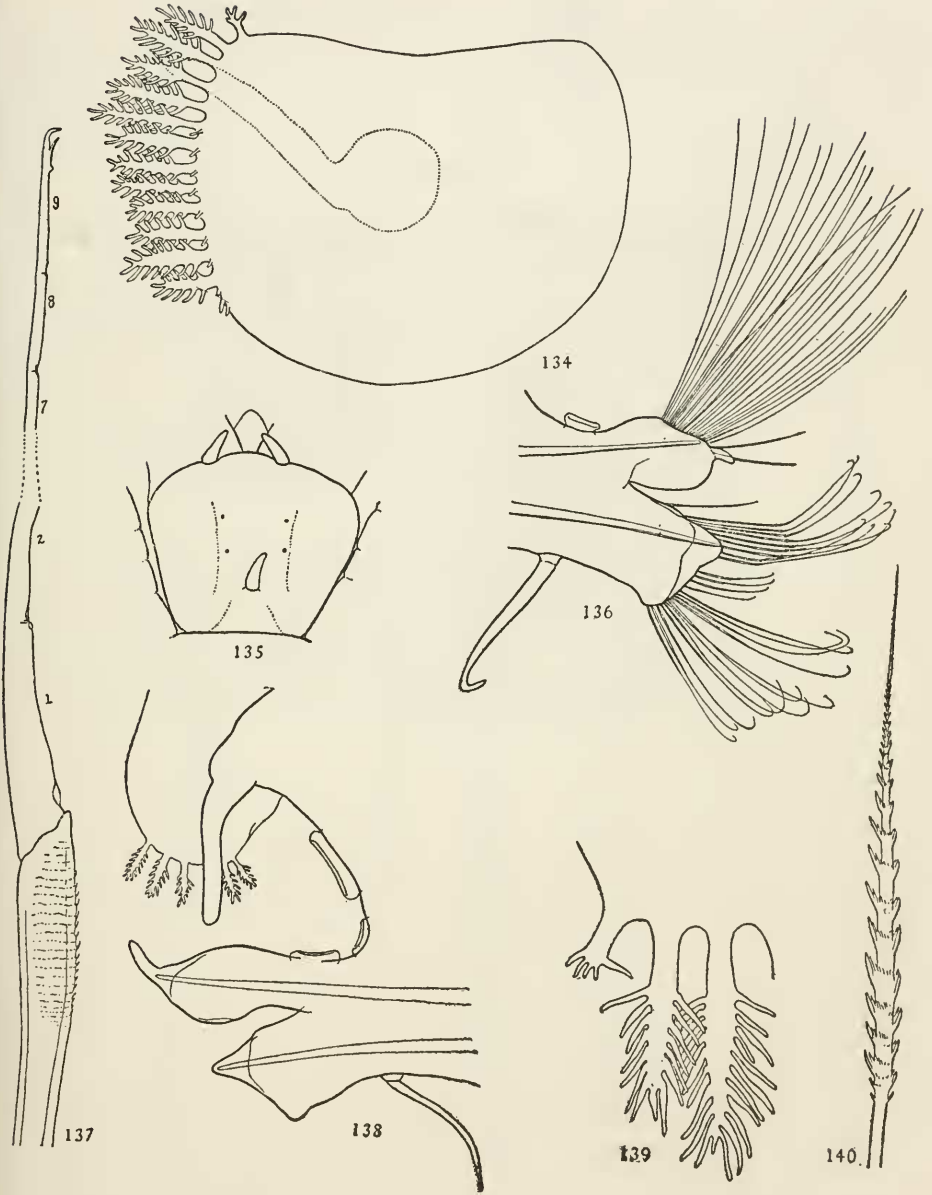


PLATE 12

Figures 141 to 145, *Eusigalion hancocki*: Fig. 141, detail of marginal fringe from ectal edge of a median elytrum, x 66; Fig. 142, outer lateral portion of elytrum from fiftieth segment, in dorsal view, x 25; Fig. 143, outline of elytrum in ventral view, with attached branchial appendage, x 25; Fig. 144, prostomial lobe and part of peristomial segment, x 30; Fig. 145, outline of forty-sixth parapodium, setae omitted, x 32.

Figures 146 and 147, *Eusigalion spinosum*: Fig. 146, portions of shaft and appendage of an articulated supraacicular neuropodial seta, x 290; Fig. 147, part of a larger serrated notopodial seta from forty-sixth parapodium, x 290.

Figures 148 to 152, *Eusigalion hancocki*: Fig. 148, a smooth, smaller inferior notopodial seta from forty-sixth parapodium, x 290; Fig. 149, a simple spinose neuropodial seta from same parapodium, x 290; Fig. 150, tip of a neuropodial seta from same parapodium, x 290; Fig. 151, articulated composite neuropodial seta from same parapodium, x 290; Fig. 152, part of a subacicular neuropodial seta from the same parapodium, x 290.

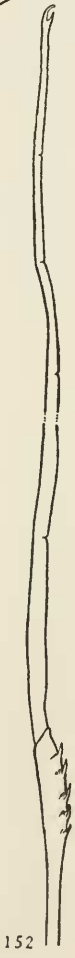
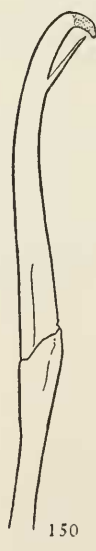
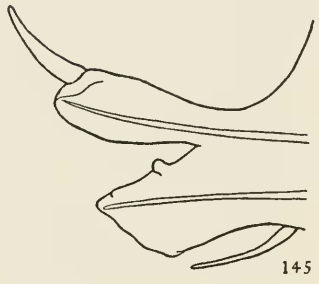
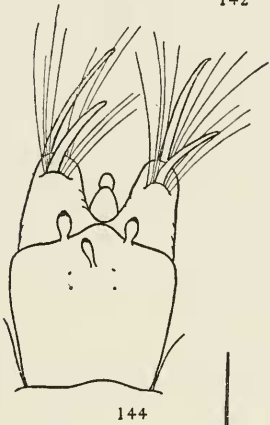
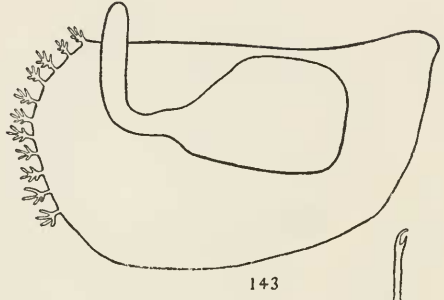
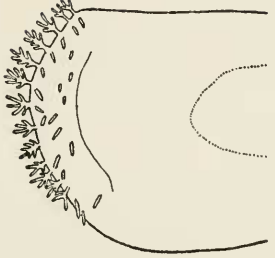
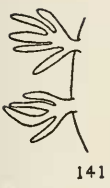


PLATE 13

Figures 153 to 162, *Sthenelais fusca*: Fig. 153, superior spinose neuropodial seta from one hundred fifth parapodium, x 290; Fig. 154, fine superior composite neuropodial seta from same parapodium, x 290; Fig. 155, median composite neuropodial seta from same parapodium, x 290; Fig. 156, stout dorsalmost neuropodial seta from individual from Point Loma, x 290; Fig. 157, stout dorsalmost neuropodial seta from individual from Sinaloa, x 290; Fig. 158, a ventral cirrus with dorsal processes, x 66; Fig. 159, arrangement of insertion of neuropodial setae in neuroaciculum in a parapodium in anterior third of body; top is dorsal, to the right is anterior, x represents simple spinose setae, dots slender composite setae (343-34); Fig. 160, outline of elytrum from fortieth parapodium, from individual from Chatham Bay, stippling represents papillar region, x 12.5; Fig. 161, seventh elytrum from individual from Point Loma, most of surface papillated but not shown, x 32; Fig. 162, elytrum from about thirtieth last segment from individual from Point Loma, papillae covering most of surface not indicated, x 32.

Figures 163 to 166, *Sthenelais variabilis colorata*: Fig. 163, fifth elytrum, elytral scar indicated, surface finely papillated though not shown, x 25; Fig. 164, part of posterior margin from preceding, showing distribution of surface papillae and beaded margin, x 130; Fig. 165, a median neuropodial seta from about forty-fifth parapodium, x 290; Fig. 166, twenty-fifth neuropodium, showing the main papillar series ventral to the inferiormost neuropodial setae, x 66.

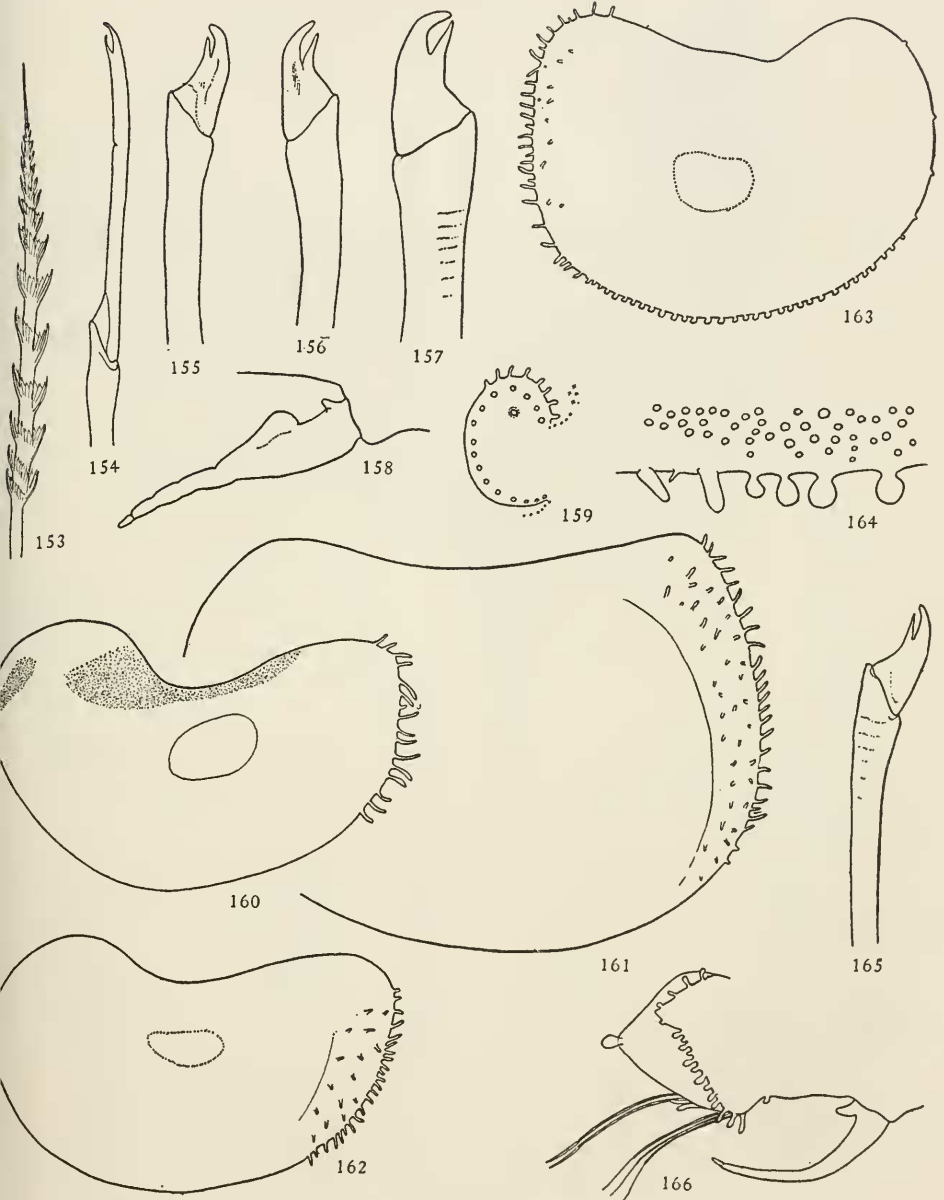
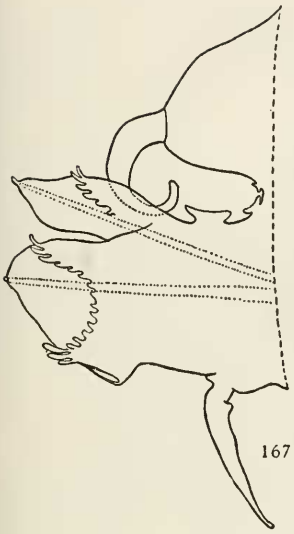


PLATE 14

Figures 167 to 175, *Sthenelais verruculosa*: Fig. 167, sixtieth parapodium in anterior view, x 12.5; Fig. 168, a nine-articulated median neuropodial seta from thirty-fifth parapodium, x 130; Fig. 169, distal end of preceding, x 290; Fig. 170, anterior end in dorsal view, first elytra laid back, left palpus and right peristomial cirrus not shown, x 12.5; Fig. 171, elytrum from thirty-fifth parapodium, small area at lower left indicates part enlarged in next figure; Fig. 172, postectal margin of preceding, circles indicate papillae, x 66; Fig. 173, portion of an inferior notopodial seta, x 130; Fig. 174, superior spinose neuropodial seta, x 130; Fig. 175, thirty-fifth parapodium in posterior view, elytrum omitted, x 12.5.



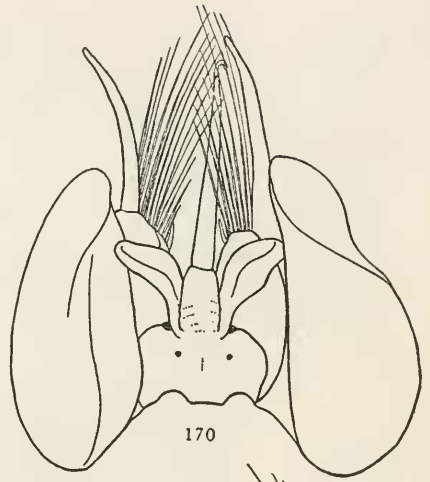
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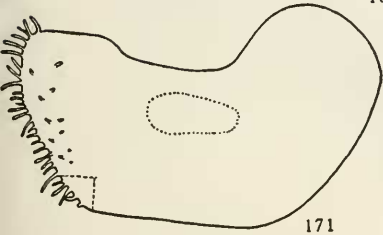
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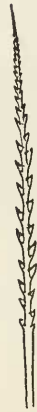
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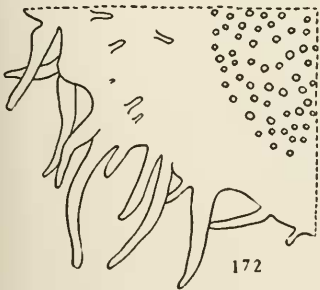
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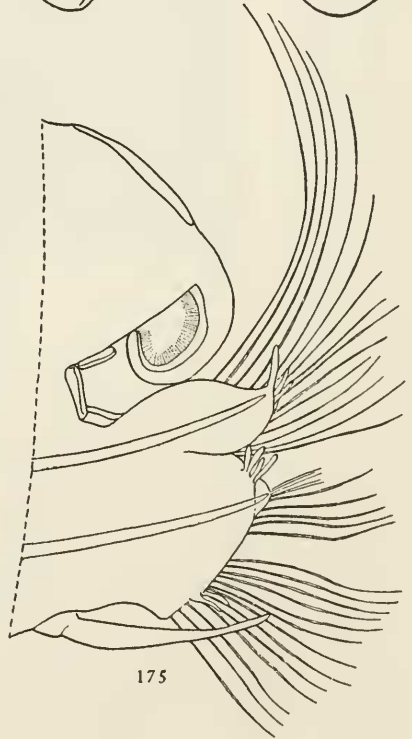
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PLATE 15

Figures 176 to 187, *Sthenelais maculata*: Fig. 176, superior neuropodial seta from a median parapodium, showing biarticulated appendage, x 290; Fig. 177, superior neuropodial seta from same parapodium with one article, x 290; Fig. 178, fifth elytrum from right side in dorsal view, stippling indicates pigmented areas, dorsal surface with fine, wart-like papillae over most of inner two thirds of elytrum, not shown, x 25; Fig. 179, eighth parapodium in posterior view, setae indicated, x 32; Fig. 180, twenty-fifth parapodium in anterior view, setae omitted, x 32; Fig. 181, part of outer lateral margin from eighth elytrum, x 290; Fig. 182, eighth elytrum from right side in dorsal view, stippling indicates pigmented area, x 32; Fig. 183, thirty-eighth right elytrum in dorsal view, x 25; Fig. 184, an inferior neuropodial seta from a median parapodium, x 290; Fig. 185, a superior spinose neuropodial seta from same parapodium, x 290; Fig. 186, distal end of a shorter median neuropodial seta, x 290; Fig. 187, distal end of another short median neuropodial seta, x 290.

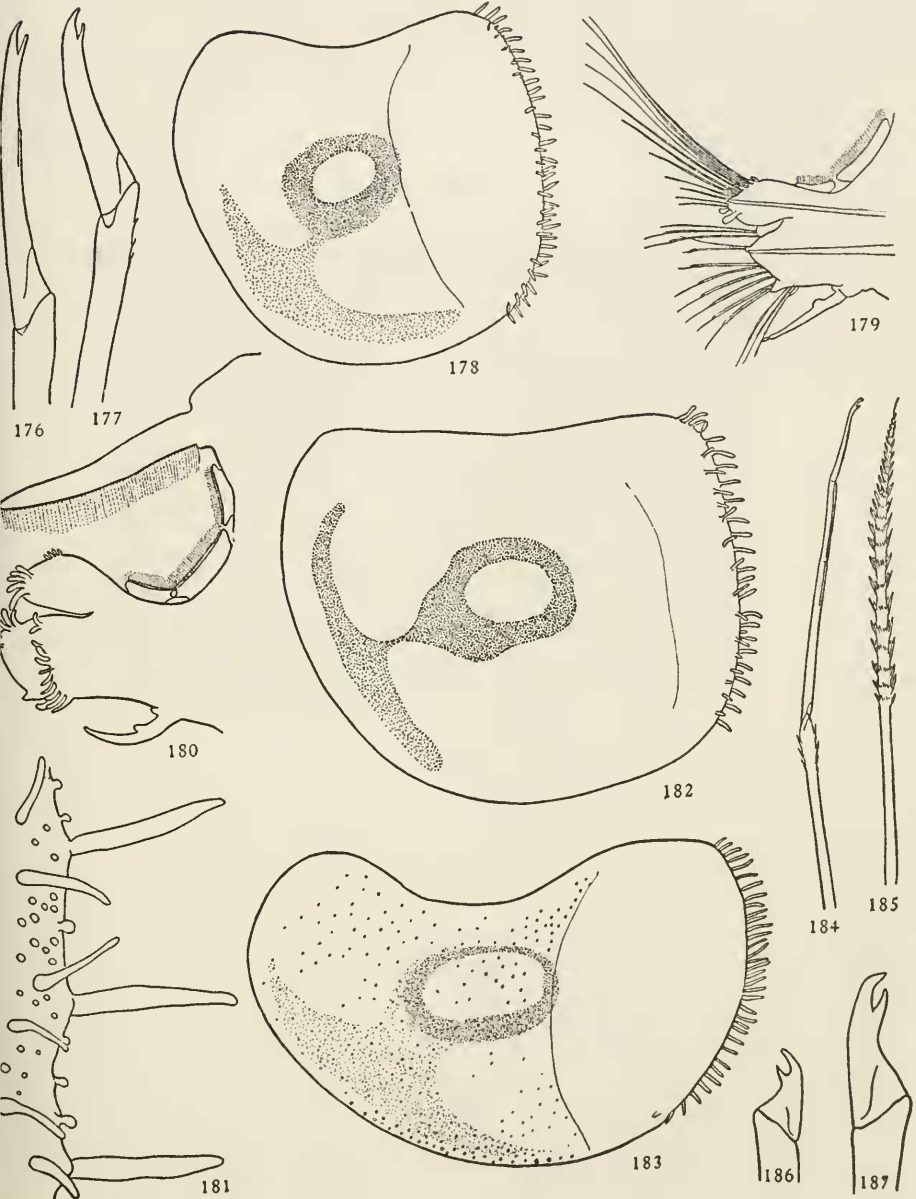
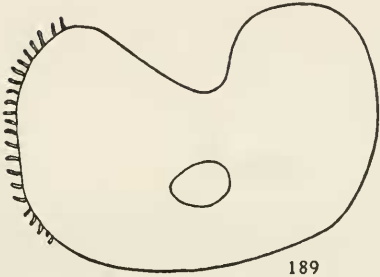


PLATE 16

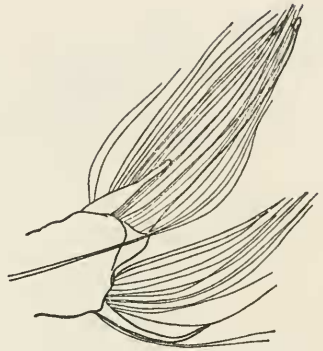
Figures 188 to 202, *Sthenelais hancocki*: Fig. 188, prostomial lobe, the anterior eyes stippled but concealed by the lateral ctenidia, x 25; Fig. 189, outline of second elytrum in ventral view, x 25; Fig. 190, first parapodium in anterior view, showing long dorsal cirrus, shorter ventral cirrus and transposed prostomial antenna, x 25; Fig. 191, outline of first elytrum from right side in ventral view, x 25; Fig. 192, superior neuropodial seta from second parapodium, x 290; Fig. 193, superior simple spinose neuropodial seta, x 290; Fig. 194, elytral spines from twenty-second elytrum in dorsal view, x 130; Fig. 195, similar spines in lateral view, x 130; Fig. 196, an inferior neuropodial seta from a median parapodium, x 290; Fig. 197, a slender median neuropodial seta from a median parapodium, x 290; Fig. 198, postlateral fringe from twenty-second elytrum, x 130; Fig. 199, distal end of a median neuropodial seta, x 650; Fig. 200, distal end of an inferiormost neuropodial seta, x 650; Fig. 201, distal end of a blunt median neuropodial seta, x 650; Fig. 202, twenty-second elytrum from right side in dorsal view, x 25.



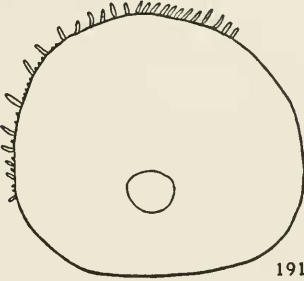
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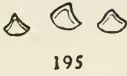
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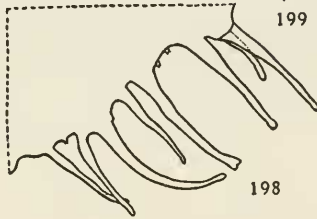
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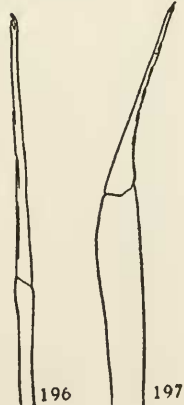


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PLATE 17

Figures 203 to 216, *Sthenelais neoleanirae*: Fig. 203, seventh parapodium in posterior view, setae indicated, x 32; Fig. 204, superior neuropodial seta from thirty-fifth parapodium, the appendage with 5 articles and a bifid tip, x 290; Fig. 205, inferiormost neuropodial seta from same parapodium, x 290; Fig. 206, distal end of seventh parapodium in anterior view, with parapodial lobular processes, setae omitted, x 66; Fig. 207, first parapodium with long dorsal cirrus, shorter ventral cirrus and the transposed prostomial antenna, x 32; Fig. 208, part of elytrum from thirty-fifth parapodium, showing distribution of larger tubercles near the postectal margin, x 66; Fig. 209, outline of elytrum from thirty-fifth parapodium in dorsal view, spines omitted, x 12.5; Fig. 210, one of larger elytral spines from same elytrum as preceding, x 290; Fig. 211, superior spinose neuropodial seta from thirty-fifth parapodium, x 290; Fig. 212, a median neuropodial seta from thirty-fifth parapodium, showing tapering, finely bifid appendage, x 290; Fig. 213, a short appendaged, median neuropodial seta from same parapodium, x 290; Fig. 214, articulation of supraacicular neuropodial seta from seventh parapodium, others are less spiny or quite smooth, x 290; Fig. 215, inferiormost neuropodial seta from same parapodium, x 290; Fig. 216, outline of seventy-second parapodium in anterior view, setae omitted, x 66.

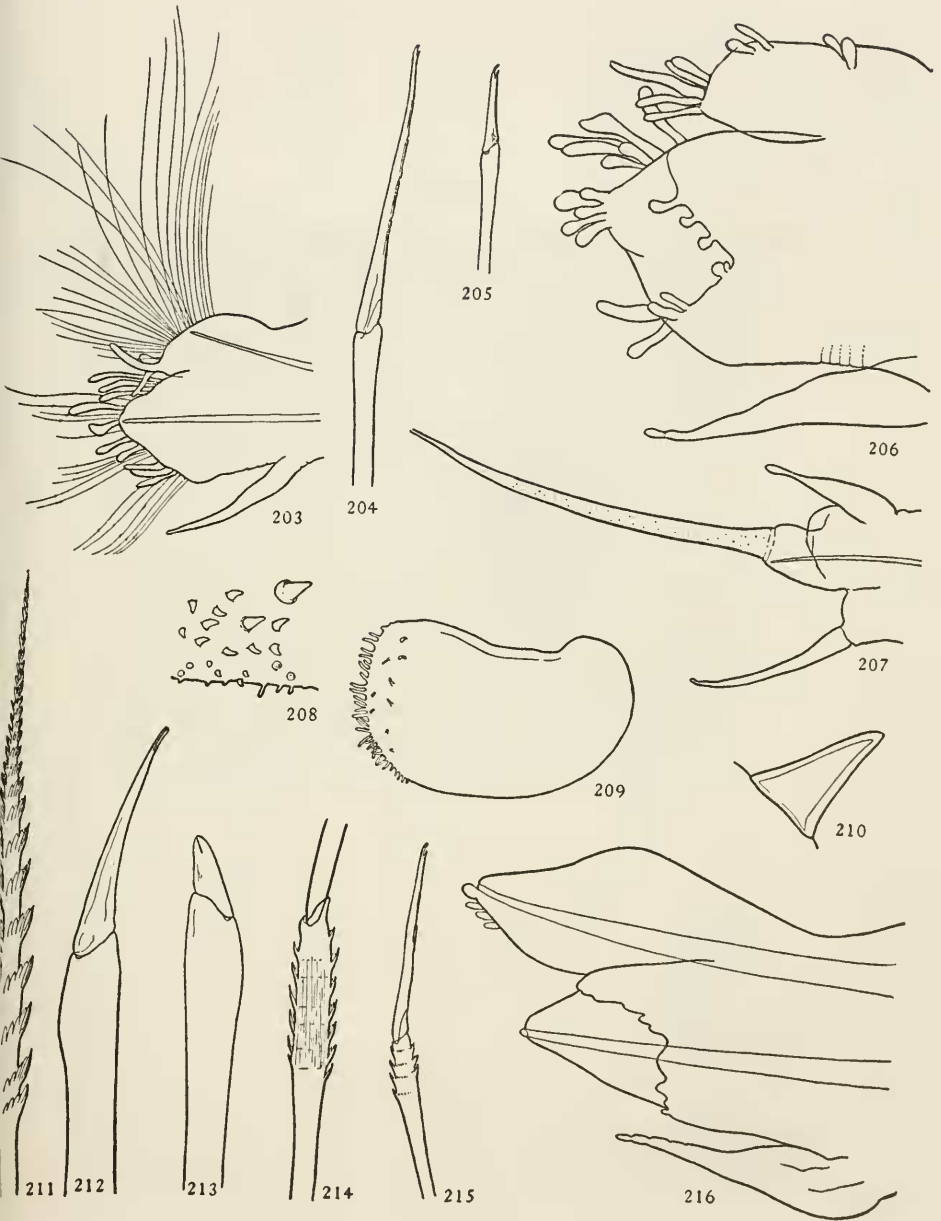


PLATE 18

Figures 217 to 225, *Leanira fimbriarum*: Fig. 217, thirty-fifth parapodium in posterior view, setae indicated, x 25; Fig. 218, prostomial lobe, anterior eyes concealed by ctenidia, indicated by stippling, x 30; Fig. 219, outline of first elytrum, the anterior margin fimbriated (in some it is quite smooth), x 25; Fig. 220, part of a median serrulated notopodial seta, x 290; Fig. 221, a superior simple spinose neuropodial seta, x 290; Fig. 222, a composite neuropodial seta, the appendage distally pointed, but not canaliculated, x 290; Fig. 223, part of an inferiormost smooth notopodial seta, x 290; Fig. 224, outline of elytrum from thirty-fifth parapodium in ventral view, x 25; Fig. 225, fifth parapodium in posterior view, setae indicated, x 32.

Figures 226 to 231, *Sthenelanella uniformis*: Fig. 226, outline of first elytrum from right side, in ventral view, x 32; Fig. 227, marginal fringe from anterior edge of first elytrum, x 290; Fig. 228, fifth elytrum from right side in dorsal view, the stippling indicates pigmented area, x 32; Fig. 229, inferiormost neuropodial seta from a median parapodium, x 650; Fig. 230, a median neuropodial seta from same parapodium, x 650; Fig. 231, a superior neuropodial seta from same parapodium, x 650.

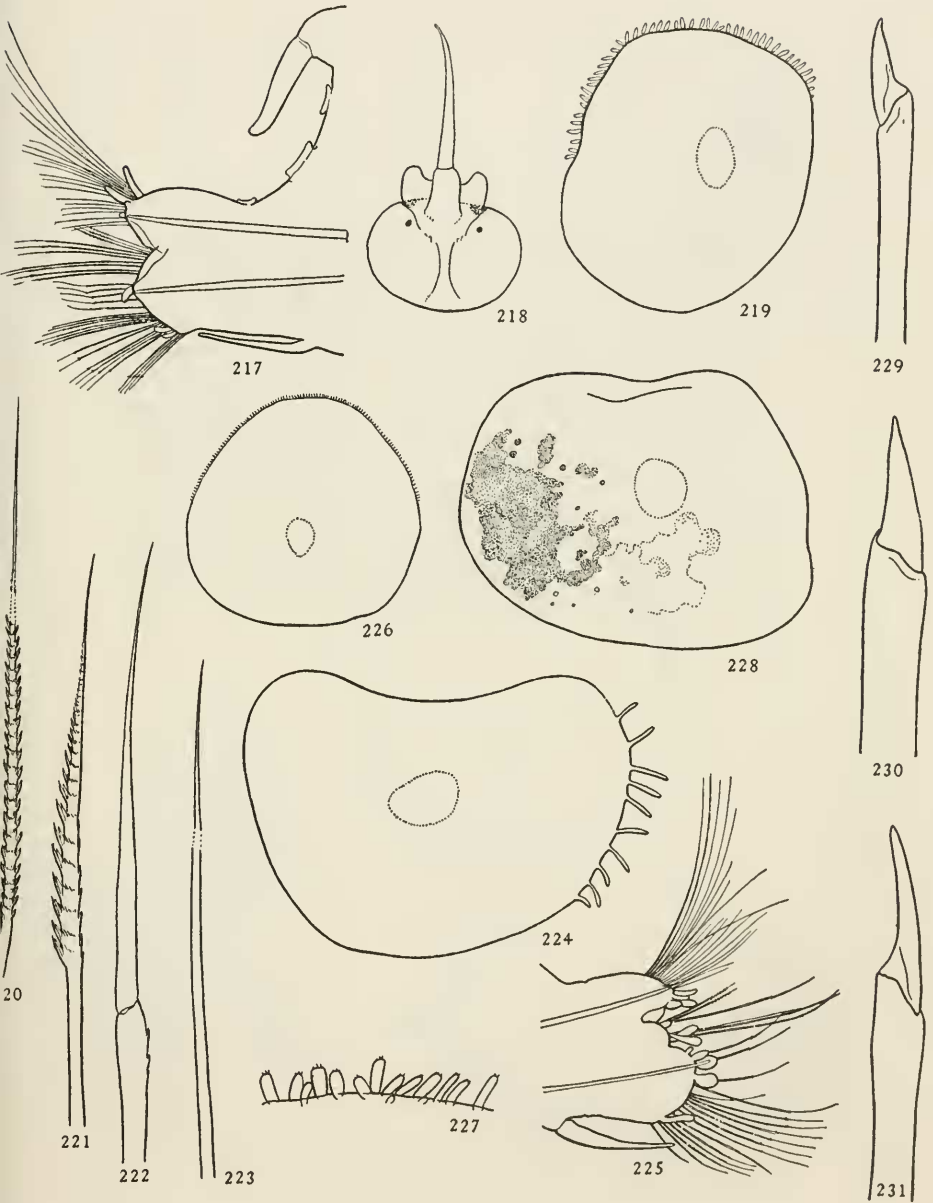


PLATE 19

Figures 232 to 243, *Psammolyce spinosa*: Fig. 232, longest inferior neuropodial seta from a median parapodium, x 290; Fig. 233, inferior neuropodial seta from seventy-eighth parapodium, x 130; Fig. 234, superior neuropodial seta from a median parapodium, x 290; Fig. 235, superior neuropodial seta from seventy-eighth parapodium, x 130; Fig. 236, a nearly smooth, distally entire neuropodial seta from a median parapodium, x 290; Fig. 237, a median neuropodial seta with bifid tip, from same parapodium, x 290; Fig. 238, anterior end, peristomial cirri and palpi omitted, x 25; Fig. 239, seventy-eighth parapodium in posterior view, setae indicated, x 25; Fig. 240, an elytrum from a posterior region, x 25; Fig. 241, median neuropodial seta from seventy-eighth parapodium, x 130; Fig. 242, a neuropodial seta from second parapodium, x 290; Fig. 243, an elytrum from anterior region, from right side in dorsal view, elytral scar dotted in, x 25.

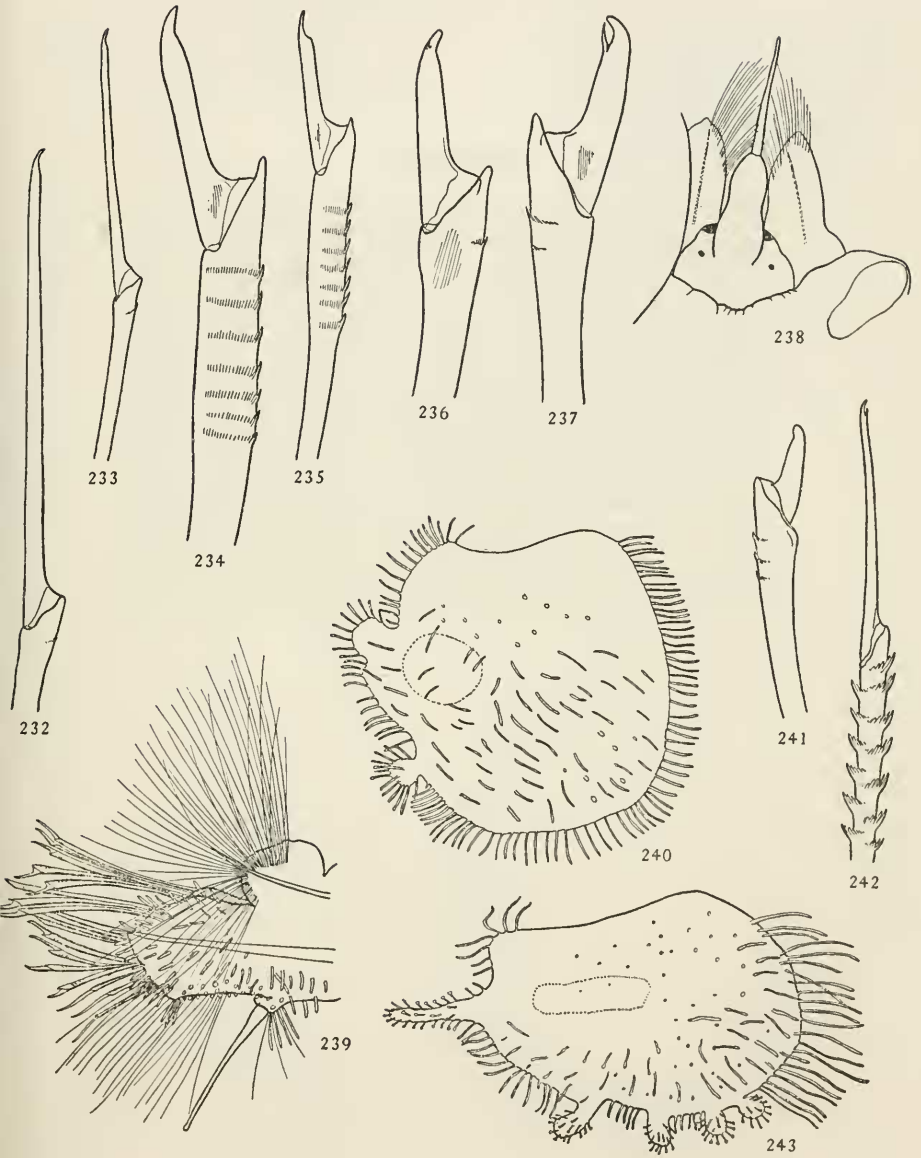
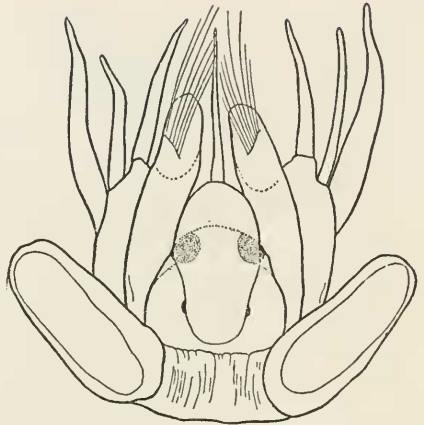


PLATE 20

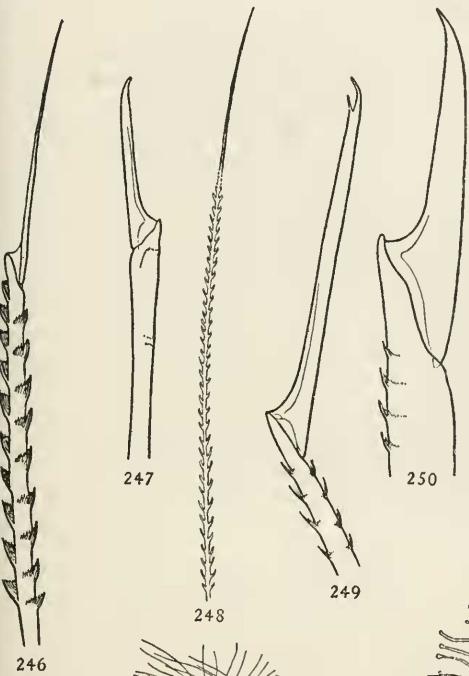
Figures 244 to 254, *Psammolyce fimbriata*: Fig. 244, prostomial lobe in lateral view from left side, x 25; Fig. 245, anterior end in dorsal view, including first elytraphoral scars, position of first pair of eyes indicated by stippling, x 25; Fig. 246, a neuropodial seta from second setigerous segment, x 290; Fig. 247, an inferior neuropodial seta from twentieth parapodium, x 290; Fig. 248, part of a notopodial seta from same parapodium, x 290; Fig. 249, a bifid inferior neuropodial seta from third setigerous segment (most are distally entire), x 290; Fig. 250, an entire neuropodial seta from third segment, x 290; Fig. 251, twentieth parapodium in anterior view, x 25; Fig. 252, elytrum from twentieth parapodium, the elongate lobe marks the inner lateral margin, the nonfimbriated edge is anterior, x 25; Fig. 253, a median neuropodial seta from twentieth parapodium, x 130; Fig. 254, a superior neuropodial seta from same parapodium, x 130.



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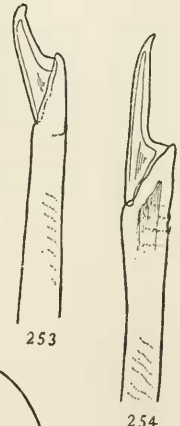
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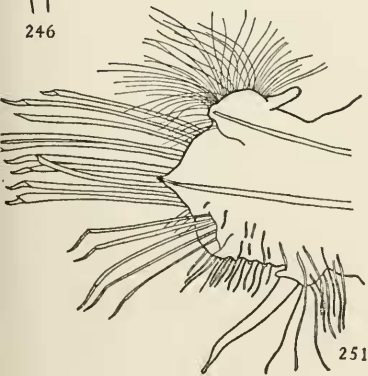
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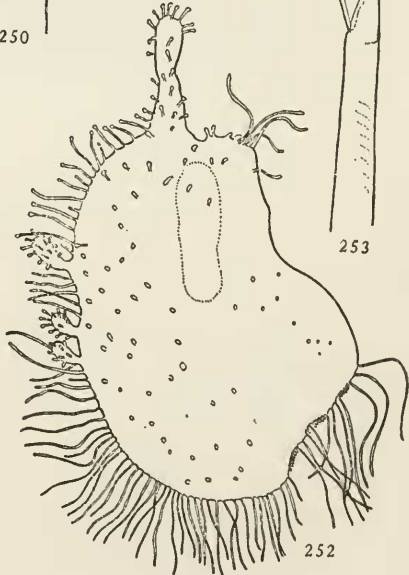


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PLATE 21

Figures 255 to 264, *Psammolyce myops*: Fig. 255, twentieth elytrum from left side in dorsal view, x 25; Fig. 256, twentieth parapodium in anterior view, setae indicated, x 32; Fig. 257, a superior neuropodial seta from third parapodium, x 290; Fig. 258, an inferior neuropodial seta from same parapodium, x 290; Fig. 259, second parapodium in anterior view, setae indicated, x 32; Fig. 260, anterior end in dorsal view, the ventral, elongate eyes concealed by the median ceratophore, indicated by stippling, x 30; Fig. 261, prostomial lobe from right side, showing relation of eyes to median ceratophore, x 30; Fig. 262, a nearly entire, median neuropodial seta, x 290; Fig. 263, a bifid median neuropodial seta, x 290; Fig. 264, an inferior neuropodial seta from a median parapodium, x 290.

Figures 265 to 267, *Halosydna parva*: Fig. 265, surface papillae from sixth elytrum, near outer, lateral margin, x 290; Fig. 266, sixth elytrum from right side in dorsal view, x 25; Fig. 267, a neuropodial seta from a median parapodium, x 290.

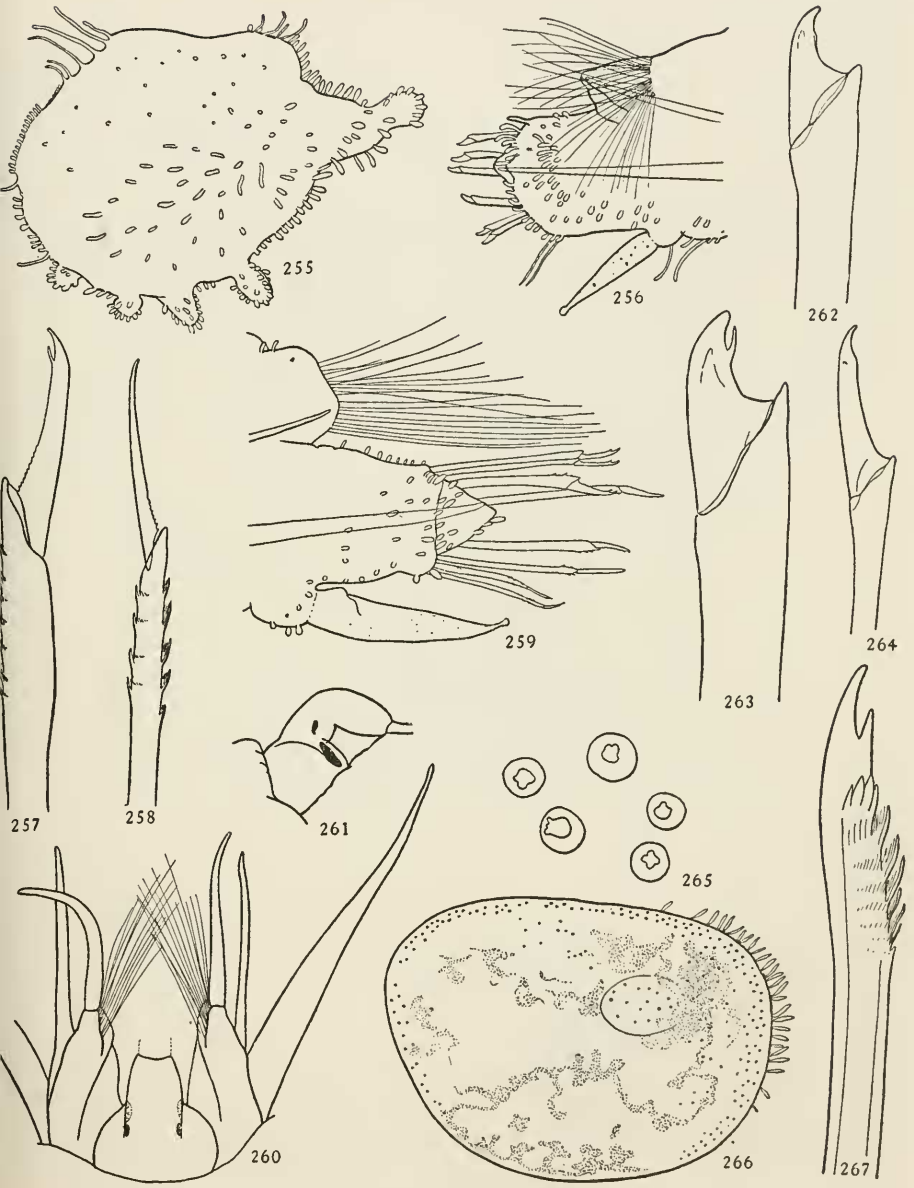


PLATE 22

Figures 268 to 272, *Psammolyce antipoda anoculata*: Fig. 268, prostomium and peristomium in dorsolateral view, from right side, with peristomium pushed back to disclose prostomial lobe, x 18.5; Fig. 269, outline of an elytrum from posterior region, the elongate lobe marks the inner lateral margin, x 25; Fig. 270, twenty-fifth elytrum from right side in dorsal view, elytral scar indicated, x 25; Fig. 271, bifid neuropodial seta from second parapodium (most of them lack the bifid tip), x 290; Fig. 272, a median neuropodial seta from a posterior parapodium, with shaft somewhat spinose, x 130.

Figures 273 to 279, *Halosydna*, species B: Fig. 273, a ventralmost neuropodial seta from a median parapodium, x 290; Fig. 274, a median elytrum from the right side in ventral view, the part bounded by broken line is enlarged in next figure, x 12.5; Fig. 275, part of median elytrum, near the anterior end, including most of the area of the elytral scar, circles indicate papillae, stippling pigmented pattern, the small area enclosed in the rectangle is enlarged in the next figure, x 32; Fig. 276, microtubercles from preceding, x 290; Fig. 277, a median parapodium, setae indicated, x 32; Fig. 278, a dorsalmost neuropodial seta from a median parapodium, x 290; Fig. 279, a long notopodial seta from same parapodium, x 290.

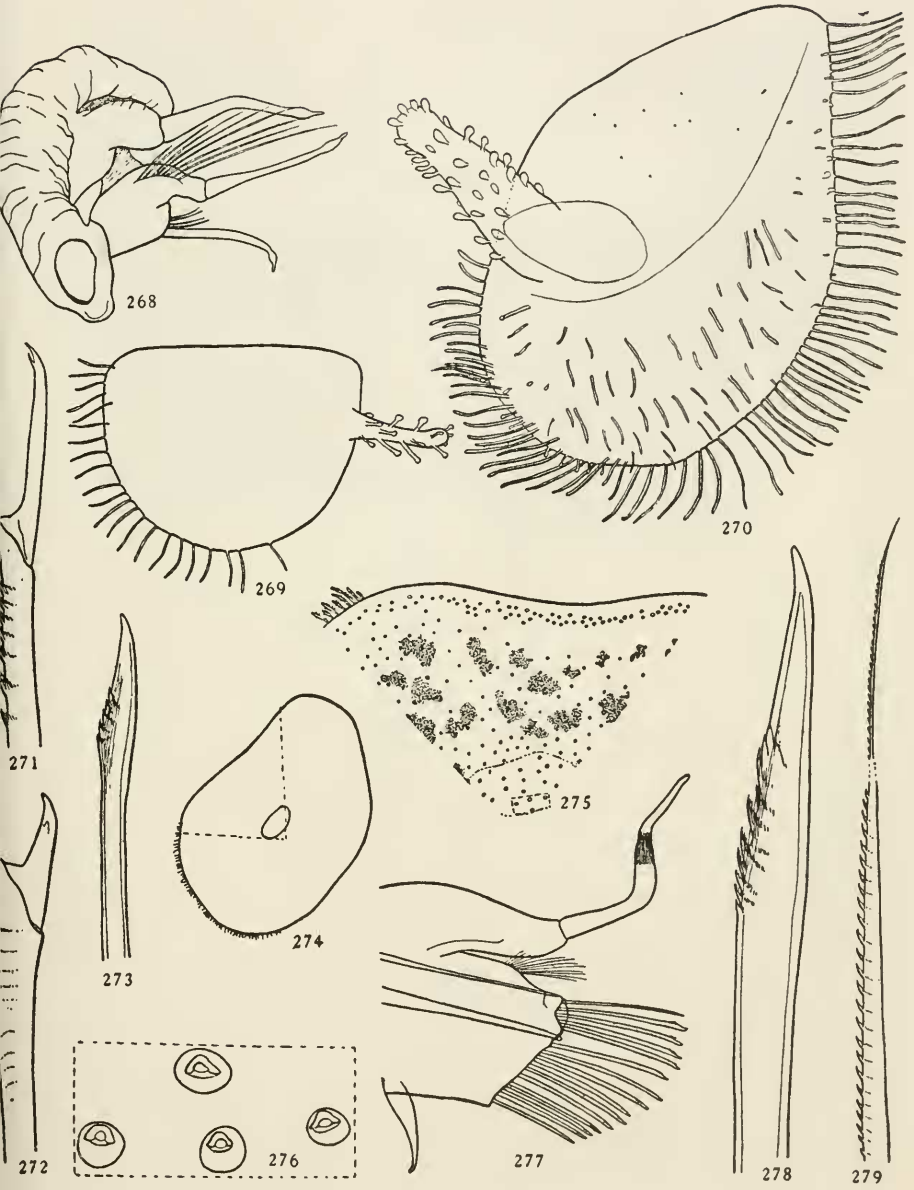


PLATE 23

Figures 280 to 288, *Pareulepis fimbriata*: Fig. 280, fifth parapodium, setae and acicula indicated, x 25; Fig. 281, eighth elytrum from 770-38, x 12.5; Fig. 282, neuropodium from nineteenth parapodium, x 25; Fig. 283, notopodial seta from fifteenth parapodium, the tip drawn out, the recurved free end is flattened, depressed (not seen in this view), x 66; Fig. 284, distal end of a dorsal aciculum from same parapodium, x 66; Fig. 285, twelfth or last elytrum in ventral view, x 7.5; Fig. 286, eighth elytrum from individual from Mission Bay, California, x 12.5; Fig. 287, eighth elytrum from individual from Ecuador, x 12.5; Fig. 288, superior neuropodial seta from nineteenth parapodium, x 290.

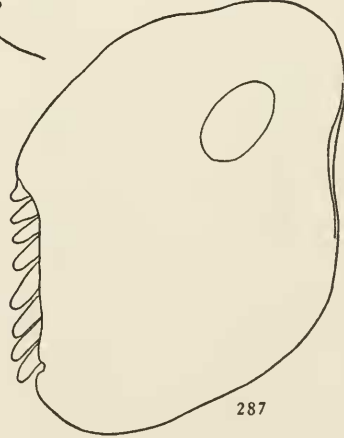
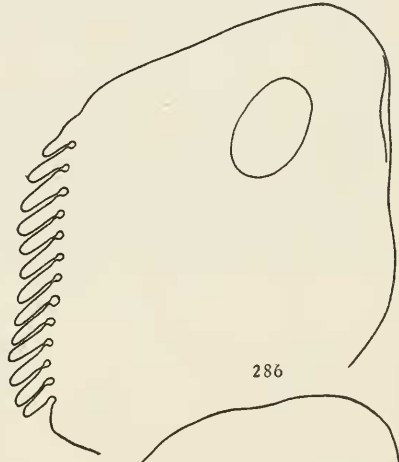
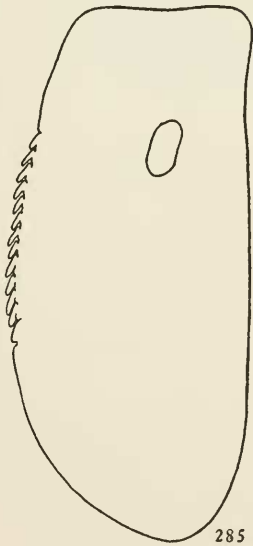
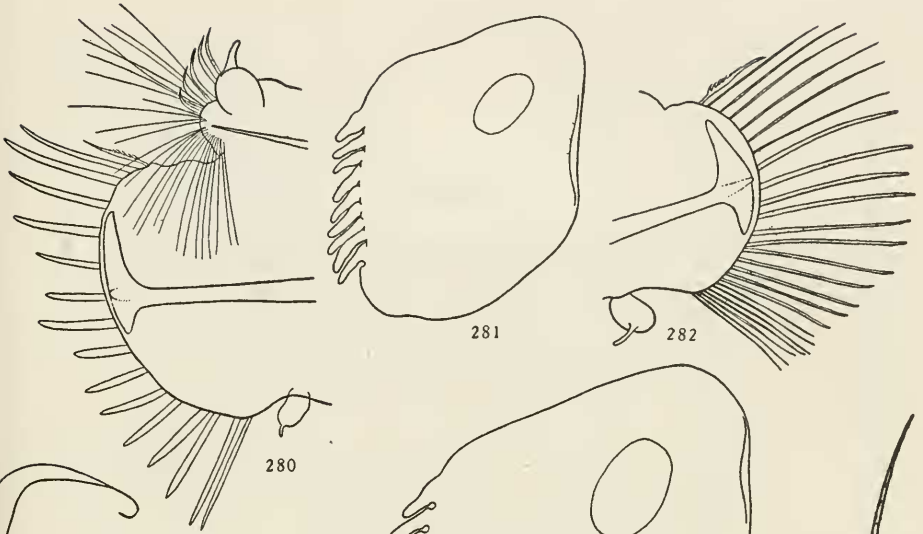


PLATE 24

Figures 289 to 293, *Polyodontes panamensis*: Fig. 289, thirty-fourth parapodium, setae indicated, x 32; Fig. 290, first parapodium (second segment) showing large ventral cirrus, x 32; Fig. 291, outline of elytrum from anterior region, in ventral view, the elytral scar is nearest the outer lateral margin, x 32; Fig. 292, a median aristate neuropodial seta, x 290; Fig. 293, a spinose inferior neuropodial seta in posterior view, x 290.

Figures 294 to 299, *Polyodontes oculatea*: Fig. 294, second parapodium (third segment) with setae indicated, x 32; Fig. 295, thirty-fourth parapodium, setae omitted, x 32; Fig. 296, third parapodium (fourth segment), setae omitted, x 32; Fig. 297, an aristate seta from a median parapodium, x 290; Fig. 298, an inferior neuropodial seta in lateral view, x 290; Fig. 299, a superior neuropodial seta from a median parapodium, x 290.

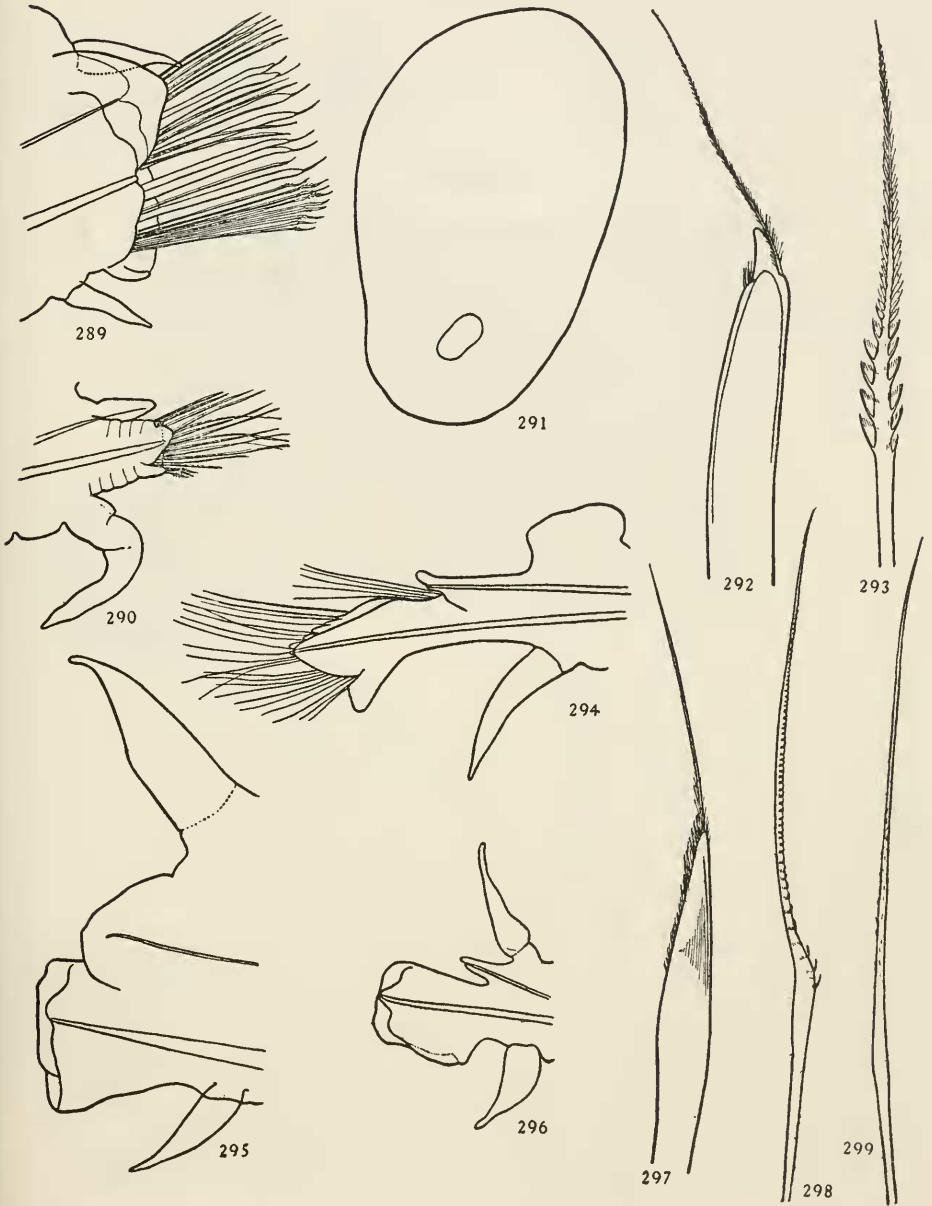


PLATE 25

Figures 300 to 308, *Polyodontes frons*: Fig. 300, anterior end in dorsal view, with part of margin of first right elytrum indicated, palpi omitted, x 32; Fig. 301, thirty-fifth parapodium in anterior view, the fine, hair-like notopodial setae and neuropodial setae indicated, x 32; Fig. 302, second parapodium with elytrum turned back, setae indicated, x 32; Fig. 303, third parapodium from the same individual as the preceding, notopodial setae not shown, x 32; Fig. 304, elytrum from thirty-fifth parapodium in dorsal view, showing outer lateral pouch, x 25; Fig. 305, inferiormost neuropodial seta from thirty-fifth parapodium, in lateral view, x 280; Fig. 306, an inferiormost neuropodial seta in posterior view, x 280; Fig. 307, a superior-most neuropodial seta from thirty-fifth parapodium, x 280; Fig. 308, a median aristate neuropodial seta from same parapodium, x 280.

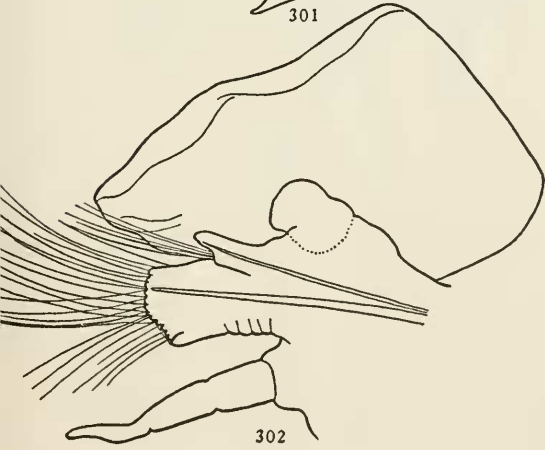
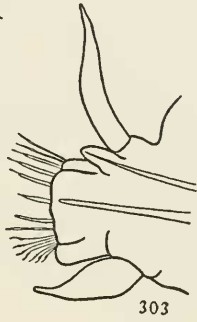
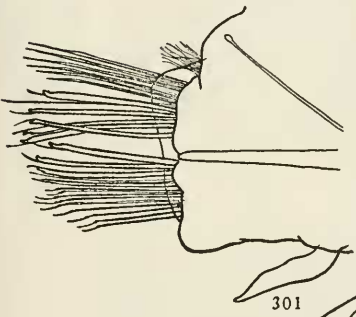
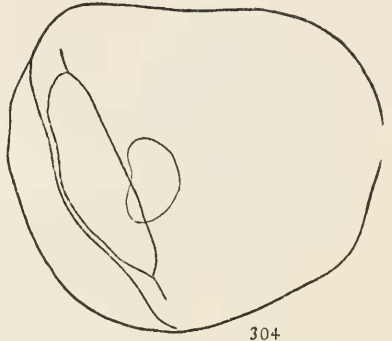
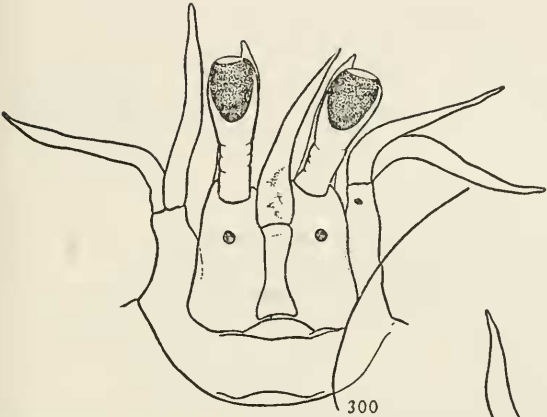
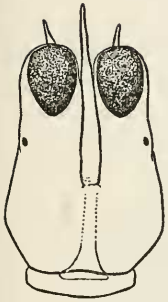


PLATE 26

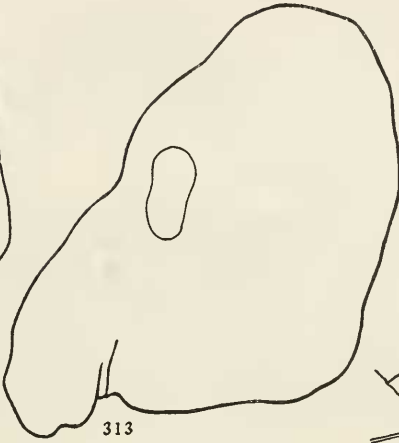
Figures 309 to 312, *Panthalis pacifica*: Fig. 309, prostomial lobe in dorsal view, x 32; Fig. 310, a superior penicillate seta from twenty-first parapodium, x 290; Fig. 311, a stout aristate seta from same parapodium, x 290; Fig. 312, an inferior neuropodial seta in lateral view, x 290.

Figures 313 to 318, *Panthalis marginata*: Fig. 313, first elytrum from left side in dorsal view, the elytral scar indicated, x 32; Fig. 314, first parapodium (second segment) with long ventral cirrus, setae indicated, x 32; Fig. 315, second parapodium (third segment), setae omitted, x 32; Fig. 316, inferior neuropodial seta in posterior view, x 290; Fig. 317, a superior penicillate neuropodial seta from a median parapodium, x 290; Fig. 318, a median aristate seta from the same parapodium (there are about 7 of these in a parapodium), x 290.

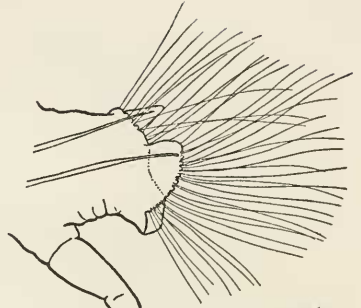
Figures 319 and 320, *Aphrodita falcifera*: Fig. 319, a long notopodial seta and dorsal cirrus from a median parapodium, showing comparative lengths of parts, stippling on the seta indicates asperities, x 32; Fig. 320, distal end of notopodial seta, shown in Fig. 319, with subterminal asperities and smooth tip, x 290.



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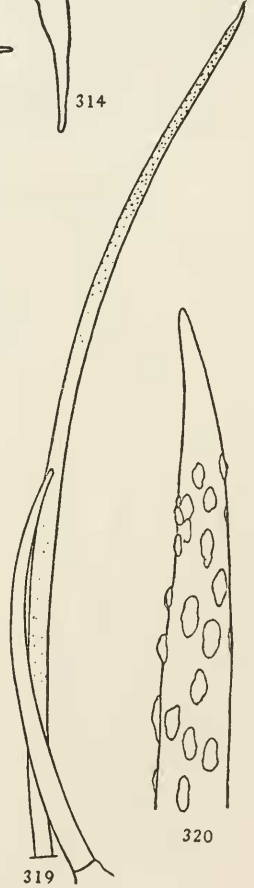
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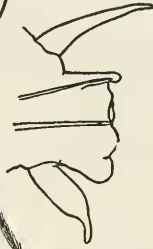
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PLATE 27

Figures 321 to 325, *Pisione oerstedii*: Fig. 321, anterior end of a smaller (25 mm long) individual, with proboscis protruded, the dorsal jaws indicated in dotted lines, x 66; Fig. 322, third parapodium, with setae and acicula indicated, x 66; Fig. 323, one of 6 composite setae in a neuropodium from a median parapodium, x 290; Fig. 324, 2 stout, acicular setae from a median parapodium, with distal end of neuropodial lobe, x 290; Fig. 325, a bent, embedded aciculum, located between the simple setae and the composite setae (others are distally straight), x 290.

Figure 326, *Pisionella hancocki*: Anterior end in dorsal view, x 66.

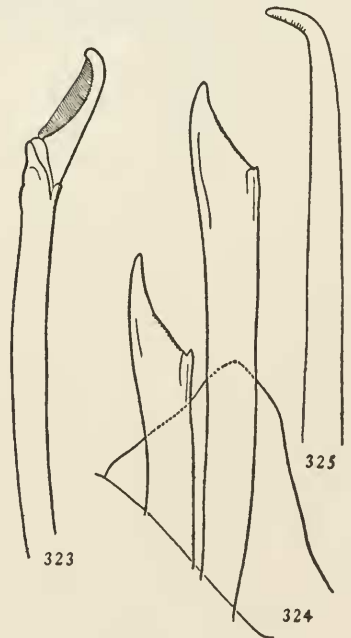
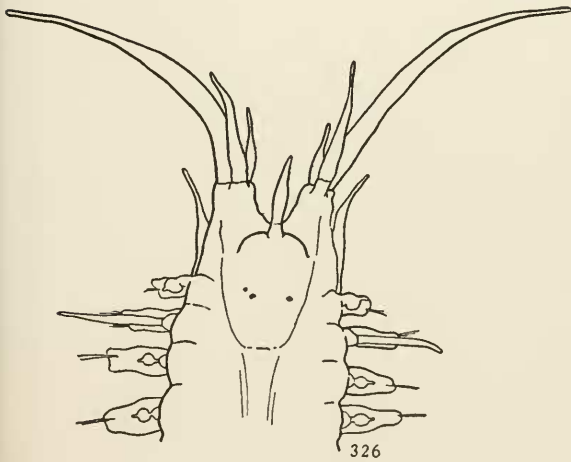
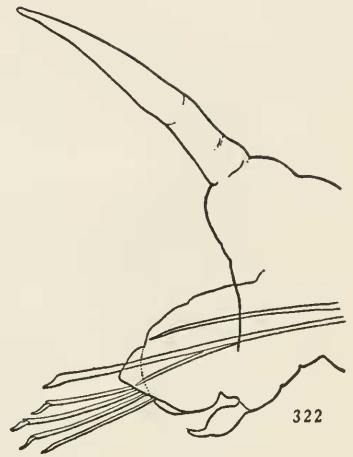
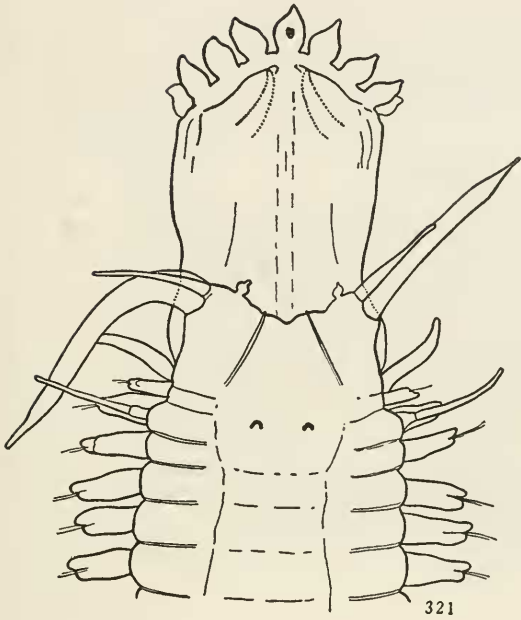


PLATE 28

Figures 327 to 333, *Pisionella hancocki*: Fig. 327, second parapodium, with setae and acicula indicated, x 66; Fig. 328, first parapodium, showing long, thick ventral cirrus and globular dorsal cirrus, x 66; Fig. 329, proboscis dissected open to show the 4 chitinous jaws; the position and number of the terminal papillae could not be accurately determined; the parallel lines indicate the midventral line, x 66; Fig. 330, acicular seta and composite seta from second parapodium, x 290; Fig. 331, a median parapodium, with acicula and setae indicated; the ventral elongation represents perhaps a nephridial papilla, x 66; Fig. 332, 3 composite setae from a median parapodium, the comb plates on the shaft are in paired series, those on the appendage in a single row, x 290; Fig. 333, third parapodium, x 66.